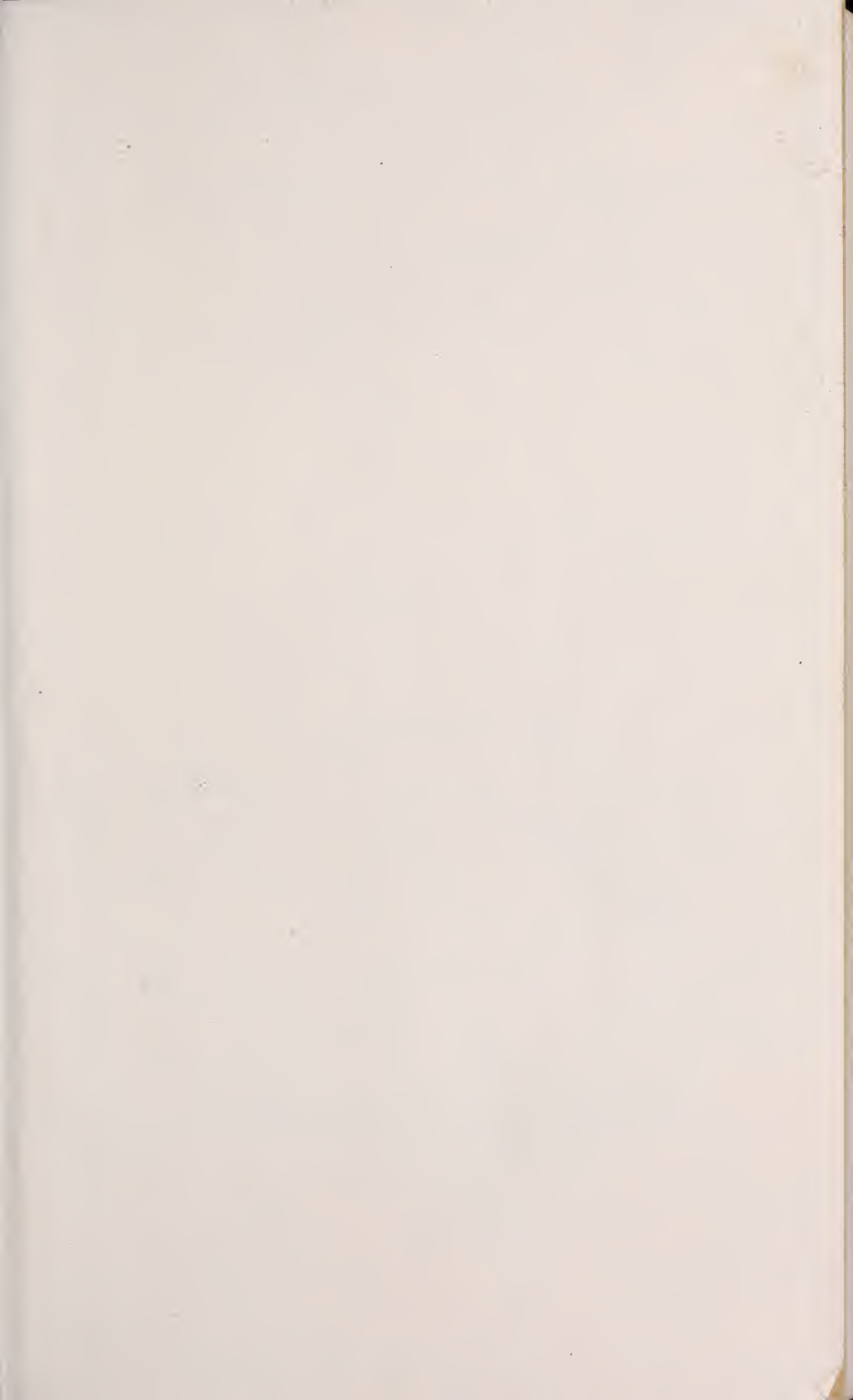




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Annual Report of the
NEW YORK
ZOOLOGICAL SOCIETY
1961

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SIXTY-SIXTH



ANNUAL REPORT

1961

THE SOCIETY'S OFFICES
630 FIFTH AVENUE, NEW YORK 20

THE ZOOLOGICAL PARK
BRONX PARK, NEW YORK 60

THE AQUARIUM
CONEY ISLAND, BROOKLYN 24

MEMBERSHIP IN THE NEW YORK ZOOLOGICAL SOCIETY

THE NEW YORK ZOOLOGICAL SOCIETY was founded in 1895 for the "instruction and recreation of the people" through the establishment of a Zoological Park, for the promotion of zoology through exhibition of collections, publication, research and exploration, and for the conservation of animal life of the world. Since 1899 the Zoological Society has directed the New York Zoological Park and in 1902 it was entrusted with the management of the New York Aquarium.

MEMBERSHIP is actively invited of all persons who are interested in the objects of the Society and desire to contribute toward its support.

ANNUAL MEMBERSHIP is \$15. Contributing Membership is \$25. Supporting Membership is \$100. These Memberships entitle the holders to Member's cards for admission and free parking at any time, and 5 guest tickets of admission (including parking) to the Zoological Park on pay days, and 5 to the Aquarium on any day; a copy of the *Annual Report*; a subscription to *Animal Kingdom*, the bi-monthly publication of the Society; privileges of the Library and Members' Lounge in the Administration Building of the Zoological Park and to attend all open meetings of the Society. Tickets to all sections of the Zoological Park for which an admission charge is made are available, free, to Members upon application at the Administration Building in person. Members will be taken on "behind the scenes" tours of the Zoological Park and Aquarium, without charge, on application, and are entitled to 20% discount on all publications of the Society. We are advised that Contributing and Supporting Membership fees are deductible from income tax within the legal limits.

LIFE MEMBERSHIP is \$500. See By-laws for conversion of Annual, Contributing and Supporting to Life Membership. Other classes of membership are: Patron, \$1,000; Associate Founder, \$2,500; Founder, \$5,000; Founder in Perpetuity, \$10,000; Benefactor, \$25,000.

APPLICATIONS for membership may be submitted to any officer of the Society at the Zoological Park or the Aquarium, or to the Society's general office at 630 Fifth Avenue, New York 20, N. Y.

FORM OF BEQUEST

I do hereby give and bequeath to the "New York Zoological Society," of the City of New York.....

.....

THE ZOOLOGICAL SOCIETY IN 1961

FAIRFIELD OSBORN, *President*

THE CAMPAIGN FOR THE NEW Development Fund was launched at the meeting of the Board of Trustees on June 7, 1961. The goal of this fund is \$7,000,000. It is hoped that \$4,500,000 will come from individuals, foundations and corporations, the balance from public funds, the latter to be applied to the improvement and development of the Zoological Park and the Aquarium.

The Board recognized that it would aid greatly in getting the campaign off to a good start if the Trustees provided leadership in making gifts. It is gratifying to report that at the year's end contributions and pledges from Trustees totalled \$1,016,908. Additionally \$122,855 was received from other donors.

The City of New York has given early evidence of its interest in the Society's plans to further modernize the Zoological Park. The Board of Estimate has approved the first three projects in our projected five-year modernization program, namely: Alaskan Brown Bear and Polar Bear Exhibits; "The World of Darkness;" "The World of Birds." These are described in the booklet referred to below.

An illustrated booklet entitled "Tomorrow" has been prepared. It vividly portrays the need of the Society for funds not only to assure that the Zoological Park and Aquarium maintain their paramount position among such institutions here and abroad but also that the Society may continue and develop its work in wildlife protection, scientific research and education. Copies of this booklet are available upon request at the Society's office, 630 Fifth Avenue, New York.

MEMBERSHIP

Membership again increased and reached a new high of 4,073 individuals. Dues from annual memberships totalled \$73,283.

FINANCES

The operating expenses of the Society are met by income from invested capital, membership dues and other miscellaneous income. It is an established policy that contributions are credited to capital account, except in such cases where donors designate that their gifts should be applied to current operations or other special purposes.

Operating income for the year totalled \$463,109 and operating expenses \$497,985, resulting in a deficit of \$34,876. This situation is a consequence of rising costs, including adequate provisions for employee welfare, increases of salaries of employees to equitable rates, and sundry other basic fixed charges. Such operating deficits have only begun to occur within very recent years and are evidence of the Society's need to materially strengthen its financial resources.

Legacies and gifts, other than those to the new Development Fund reported above, totalled \$236,969. Grants for scientific research from governmental sources and foundations aggregated \$79,441.

WILDLIFE PROTECTION

The Society continued to take a leading part in helping resolve the crisis facing wild animals in Africa. Early in the year G. W. Merck, Secretary of the Society, accompanied Dr. Frank Fraser Darling, Vice-president of the Society's affiliate, The Conservation Foundation, on a three-months' survey in the Sudan, the purpose of which was to formulate a program for the management of National Parks and Game Reserves in that country. This project was undertaken at the request of the Sudanese government.

The major part of the Society's wildlife efforts in Africa was focused in Kenya, Uganda and Tanganyika. Funds were appropriated principally for education of Africans, field research studies and construction of new watering sources for wild animals in critical areas. Contributions to the African Wildlife Fund totalled \$25,835. Expenditures from this Fund, combined with payments from other conservation funds of the Society, totalled \$35,263.

SCIENTIFIC RESEARCH

Throughout its history the New York Aquarium has excelled in the degree of its contributions to marine biological knowledge. Its work has ranged from strictly systematic and zoo-geographical studies through those concerned with ecology, behavior, physiology, morphology, genetics, biophysics and biochemistry, as well as parasitology and pathology. Presently there is increasing awareness that new opportunities exist for far more intensive research in marine biology and the chemistry of oceans which, among other consequences, may lead to drawing larger values from the productivity of the sea, including promising new drugs for man's pharmacopeia. On these premises, Dr. Ross F. Nigrelli, the Aquarium's Pathologist, in concert with other members of the Aquarium staff and its associates in other institutions, formulated plans for the establishment of a Department of Biochemistry and Ecology. This new Department was established

by action of the Board of Trustees in 1957. Plans were then laid for the construction of Laboratories of Marine Sciences to be located next to the Aquarium at an estimated cost of \$1,247,000. On July 6 we were notified that the National Advisory Council on Health Research Facilities had recommended approval of our application for a grant of \$623,500 to meet half the costs of the proposed laboratories. Efforts will now be made to raise the complementary amount from other sources.

It has been evident that there should be a clearer understanding among the Society's members of the scope of the scientific research work of our institution. A general report on this subject is in preparation and will be distributed during the coming year.

TRUSTEES AND STAFF

A loss was suffered during the year through the death of Mr. William DeForest Manice, who had served as a Trustee for twenty-five years and as a member of the Executive Committee for eight years.

Messrs. Howard Phipps, Jr., and Robert Winthrop were elected and welcomed as new members of the Board.

Mr. William G. Conway was appointed Director of the Zoological Park by action of the Board of Trustees at its meeting on June 7.

A new staff position, that of Personnel Director, has been established. Mr. John McKew has been appointed to it.

On August 23, Dr. John Tee-Van completed his fiftieth year of active service. This occasion was duly celebrated at the Zoological Park and subsequently the Board of Trustees, at its meeting on December 19, voted that the Society's Gold Medal should be awarded to Dr. Tee-Van for unusual and meritorious services.

All in all, this has been a year of unusual activity—an observation that is substantiated by the various departmental reports that follow. The successful launching in mid-year of the Development Fund Campaign represents a highly encouraging augury for the future. Our institution holds in its hands—*assuming adequate financial resources*—immeasurable opportunities for greater accomplishment.

THE ZOOLOGICAL PARK AND THE AQUARIUM IN 1961

JOHN TEE-VAN, *General Director*

Summary of the Year

SINCE THE departmental reports that comprise the bulk of this Sixty-sixth Annual Report of the New York Zoological Society are themselves summaries of the year's work, the present "Summary of the Year" is actually a summary of summaries and will perforce be expressed for the most part in generalities.

The Zoological Park and the Aquarium exist primarily to exhibit animals—the greater the variety the better—and so the census of animals in the collection as of the end of the year is a good index of accomplishment. By this standard 1961 was an extraordinarily good year at the Zoological Park—indeed, we must go back to 1917 to find a year when more kinds of animals were exhibited.

ZOOLOGICAL PARK COMBINED CENSUS December 31, 1961

	<i>Species & Subspecies</i>	<i>Specimens</i>
Mammals	198	574
Birds	640	1,571
Amphibians and Reptiles	269	742
Totals	1,107	2,887

As for the Aquarium, its collections fluctuate seasonally to such an extent that the end-of-the-year census is not truly indicative of the variety of its exhibits. However, in 1961, the end of the year showed 147 kinds of vertebrates and invertebrates as against 129 in 1960.

Attendance at both the Zoological Park and the Aquarium suffered considerably from the seven-weeks' strike of employees in April and part of May—for the most part a period of good weather that normally would have thronged both institutions.

SUMMARY OF ATTENDANCE

Month	Zoological Park		Aquarium	
	1960	1961	1960	1961
January	68,349	31,077	10,503	7,500
February	72,296	49,177	12,228	7,870
March	90,438	154,240	9,262	14,522
April	274,822	664*	17,226	—*
May	331,020	219,225	41,268	12,221
June	308,795	380,048	49,621	40,392
July	429,968	402,982	59,195	41,551
August	349,745	357,752	55,752	43,864
September	209,203	225,003	23,180	17,497
October	210,556	168,573	17,310	15,301
November	143,427	125,991	17,054	19,428
December	40,435	35,121	8,105	7,981
	2,529,054	2,149,853	320,704	228,127

*The Zoological Park and the Aquarium were closed by a strike between April 2 and May 19, 1961.

The total number of visitors at the Zoological Park between its opening on November 9, 1899, and December 31, 1961, was 134,251,537.

Development of a practical method to change the activity rhythm of nocturnal animals from night to day, and the impressive demonstration of it in the "Red Light Room" in the Small Mammal House, was an outstanding accomplishment of the Mammal Department.

"Home grown" birds—hatched from eggs laid by birds in the collection—are an important source of specimens for us and the Bird Department made special efforts to collect eggs and incubate them. Some of the hatchings were the first on record in a zoological garden. The experience we are gaining will be invaluable as we have opportunities to rear rare and threatened species.

Naturalism in animal exhibits is readily attained nowadays by the use of artificial vines, flowers and plants; many of these plastic creations are astonishingly realistic. They have the great advantage that they can be used in compartments where there is insufficient light to permit real plants to grow—and also that the tough plastic is not destroyed by the animal inmates. The Reptile Department has made excellent use of this kind of foliage in a Tropical Habitat compartment for lizards, snakes and turtles. It replaces the former Komodo Monitor compartment in the east end of the Reptile House.

While the health of the collection was generally good, there was a very serious outbreak of botulism on our exhibition waters and our waterfowl collection was hard hit. Since the summer outbreak we have in the main restored it to its former stature.

At the Aquarium, the new Polar Bay exhibit was approaching completion at the year's end and water-filtering problems appeared to have been overcome. Deep salt water wells were delivering plenty of clear and cold water.

The Aquarium's collections were in excellent condition, with such spectacular exhibits as White Whales from Alaska, both Atlantic and Pacific Walruses, and an unrivaled display of seals.

Dr. Tee-Van attended the conference of the International Union of Directors of Zoological Gardens in Rome and Naples, showing the film produced by Mr. Conway on the capture of flamingos in the mountain lakes of Chile and Bolivia. After the meeting he visited a number of zoos in western Europe.

THE ZOOLOGICAL PARK

THE DIRECTOR'S REPORT

WILLIAM G. CONWAY, *Director*

THE NEW YORK Zoological Park was founded at a time when natural history was in the cataloging stage and many of our exhibits, planned in the 1890's, are so arranged that the visitor may see just what kinds of animals there are in an orderly fashion. This synoptic view of the diversity of living creatures is still a part of today's exhibition goals, but now our visitors' broadened horizons as well as the responsibility of zoos toward the diminishing animal world itself, have created new needs and obligations for us. Thanks to modern technology, we can meet them.

Zoo visitors should have the opportunity to learn something about each animal's environment through natural habitat displays, to explore the mystery of wild animal behavior, to be informed by special displays of nocturnal species, of burrowers, of strange animal courtship rites and of curious creatures of camouflage. They should be able to view animals performing characteristic acts—Cheetahs running, bats navigating by sonar orientation, for example. The distractions of confining bars and wire must be eliminated through the use of moats and other invisible barriers.

Techniques are available to reach these goals. The esthetic values of our exhibits have been stressed in the past two decades. We have made a strong start: new methods of creating workable natural habitat displays through the use of plastics and special lights have been developed in the past year, we have found a technique for reversing and displaying the activity cycles of nocturnal mammals, and experimental group exhibits have been effected.

The justification for removing an animal from the wild for exhibition must be judged by the value of that exhibition in terms of human education and appreciation, and the suitability and effectiveness of the exhibition in terms of each wild creature's contentment and continued welfare. Man's works and his proliferating population impose new stresses upon the wild species, and those stresses demand greater responsibilities from the zoological parks of the world.

Each day major wild animal populations—"zoo animals"—are dim-

inishing, but to some extent zoological parks can reverse the trend. As an example, in 1903 we received our first Arabian Oryx and several young were bred and reared in the Zoo. But in those days the Arabian Oryx was not considered a threatened species and no room was allotted for the maintenance of a breeding herd. Our last specimen died in 1924. Within recent weeks word has reached us that perhaps the last herd in the wild was machine-gunned to death on the sands of Arabia. Perhaps five specimens remain in the world's zoos and, with luck, it may be that they will be able to carry on the species as "zoo wards," as the Père David's Deer and the Wisent have been carried on.

Other species, not rare in the wild, have been barred from American zoological collections by the stringent quarantine against diseases that might affect our domestic livestock herds. It may be many years before we again see the famous Warthog or the Babirusa.

The Zoological Park, then, has an urgent responsibility as a repository and interpreter of living treasures. The Zoo today finds itself committed, as are few other institutions, to the conservation of wildlife. Fortunately, this is not a new or strange idea to us; it will be remembered that the New York Zoological Park was the original home of the American Bison Society.

The "public image" of a zoological park at one time was, and in the minds of some people may still be, that it is primarily for children. The facts are otherwise.

Tacitly, zoos have themselves recognized the age strata in their visitors by creating special "Children's Zoos." Recent surveys indicate that zoo visitors 17 and over make up more than 50% of zoo attendance. The Frankfurt Zoo, for instance, finds that only 27% of its visitors are under the age of 15, and while the Los Angeles Zoo reckons its attendance as 1.1 child for each adult, the Chicago Zoological Park reports 2.39 adults to each child.

Awareness of these ratios is creating a rise in the calibre of zoo exhibits and occasioning important changes in the upper level of information we make available to the visitor. New types of illustrative educational signs were developed several years ago for certain bird exhibits and are gradually being extended among other exhibits in the Zoological Park. These, and increased emphasis on natural habitat displays, are greatly increasing the effectiveness of our displays. We hope that some day the budget will permit the establishment of an Exhibition Department capable of preparing illustrative and educational material and special exhibits and natural habitat displays to aid the Curators.

Attempts to meet the challenges outlined above have occupied

much of the past year at the Zoological Park. A modernization plan has been formulated, and a five-year program drawn up. This program is the basis of the zoo's capital improvement goals in the Society's Fund Raising Campaign. In the first \$3,700,000 increment are budgeted a completed African Continental Exhibit, a display for nocturnal animals called the "World of Darkness," a radical new bird building to be called the "World of Birds," Polar and Alaskan Brown Bear exhibits, a South American Continental Exhibit and a Wildlife Survival Center. The latter project proposes the gradual development of the zoo's nearly one hundred acres of forest lands for the purpose of maintaining breeding herds of certain of the more spectacular vanishing species. Not only will we thus play our part, along with other zoos now formulating such plans, in the preservation of wild forms, but through it we will attempt to insure our *own* continuance.

The Spring of 1961 was plagued with serious labor difficulties. It could hardly be hoped that a large operation such as ours, employing many trades, would remain forever un-involved in the organized labor movement. On Easter Sunday, following several years of labor negotiations, and two previous short strikes (against the City rather than the Society), the American Federation of State, County, and Municipal Employees (Local 1501), which had organized most of our work force, called a strike. The strike lasted nearly seven weeks during which the zoo was not open to the public. The usual working conditions as well as wages and hours were little involved, as the City of New York controls these employment aspects of most of our positions. The major dispute concerned the Zoological Society's demand for a guarantee of safety for the thousands of living creatures in its care at the Zoo and the Aquarium. Taking the position that it could not accord recognition to a "zoo union" which would not make such a guarantee, the Society refused to bargain about the health of its collections. The Union was unwilling to relinquish its threat to the safety of the animals as a bargaining matter. With the onset of the strike, the Society was successful in obtaining court action that, along with commendable adherence by most affected employees, assured the safety of the collections. Labor negotiations were handled for the Society by labor counselor Walter Gordon Merritt, his associate Gardner Ingraham, and by Mr. Driscoll and Mr. Conway under the counselor's advice.

On May 9, the Union and the Society signed a permanent agreement which stands today as the zoo world's "Magna Charta" in labor relations. It includes the following provisions:

"The parties agree that the animals in the custody of the Society at the Bronx Zoo and at the Aquarium should never be deprived

of food, drink, sustenance or needed care by reason of any controversy or disagreement which might arise between the parties.

"The Union agrees that it will at all times oppose concerted action to deprive said animals of food, drink, sustenance, or needed care.

"This agreement to continue in full force and effect as long as the Union claims to represent or seeks to represent, any of the employees of the Society."

The agreement also establishes a number of positions, important to the health of the animal collection, as non-strikable. We believe that both the Society and the Union may take pride in the creation of a far-reaching and forward-thinking concept whose consummation is new in this field. It is especially good to report that at least one other Union and Zoo have already followed the terms of our "Magna Charta." Having reached this understanding as to their basic relations, the Union and the New York Zoological Society signed a separate Collective Bargaining Agreement on May 18 as to the terms and conditions of employment.

During the year, the Zoo's operation was enhanced by the addition of a Personnel Department, a substantial reorganization of the Zoological Park Staff, and construction of new offices for the Facilities and Purchasing operations. Through an agreement with AudioTours Incorporated, forty talking labels, operated by keys sold at our souvenir stands, were placed at various exhibits around the park. Mr. John McKew joined our staff as Personnel Manager and Mrs. Dorothy Reville, for many years a mainstay of our Publications Department, took a position on the Society's Staff as Editorial Assistant.

Other main-events of 1961 will be reviewed in greater detail in the Departmental Reports that follow.

DEPARTMENT OF MAMMALS

JOSEPH A. DAVIS, JR., *Associate Curator*

GRACE DAVALL, *Assistant Curator*

JOSEPH RUF, *Head Keeper*

LEE S. CRANDALL, *General Curator Emeritus*

THE MAMMAL COLLECTION in 1961 was the largest, in species and subspecies, that we have exhibited since 1926. The end-of-the-year census showed 198 forms, of which 10 were new to us.

THE COLLECTION

Lack of exhibition space continues to be a problem. Enlargement of the Crotona parking field in 1958 preempted an area once devoted to cameloids and elk; the displaced animals had to be relocated or sold. Since then it has not been possible to lay out new ranges.

A minor solution to the space problem has been provided in the Small Mammal House, however. Through a careful choice of species and individuals, it has been possible to exhibit two or even three species (from the same general habitat) in one compartment. Reversal of the activity cycles of nocturnal species in the Red Light Room of the Small Mammal House has enabled us to observe them more closely and to make modifications and adjustments; the result is that the condition of our small mammals is generally much improved. For example, two that are very difficult to maintain—an Indian Pangolin (*Manis crassicaudatus*) and a Silky Anteater (*Cyclopes didactylus*)—are thriving and the latter has set a longevity record in the zoo.

Noteworthy acquisitions included a trio of young Orang-utans, pairs of Malayan Tapir, Small Malayan Chevrotain, Red Kangaroo and Steller's Sea Lion, two male and four female Thomson's Gazelles, two female Gerenuks, a Cheetah, Snow Leopard, three Indian Pangolins and a Silky Anteater.

An adult female Grizzly Bear was presented by the National Park Service after she began to frequent campsites in the Yellowstone and thus posed a potential danger to visitors.

BREEDING

Eighty-eight mammals were born—about an average number. All three Roosevelt Elk cows produced and reared young and we now

have a fine herd of seven animals and expectation of further annual increments. A Pigmy Hippopotamus was born and reared. Most disappointingly, six South American Bush Dog pups survived only a few days, despite what appeared to be excellent care by their mother. Births of this species in captivity are rare.

The births of two species in the Red Light Room indicate that reversing day and night does not adversely affect reproduction. The first birth, that of an African Palm Civet, is not particularly rare, but that of a Kinkajou is not only the first of its kind in the Bronx Zoo but one of the few in captivity anywhere.

PHYSICAL IMPROVEMENTS

The "Red Light Room" to which reference has been made above is the north two-thirds of the Small Mammal House which has been re-wired to exhibit nocturnal species under red fluorescent light by day, thereby simulating the animals' night-time, and under white light by night to simulate the daytime during which they normally sleep. The room was equipped for this experiment at a cost of less than \$500 and has been consistently successful since its opening at the fall Members' Day on September 14. Numerous requests for construction details have been received from other zoological parks, as far away as Australia.

In the diurnal section of the Small Mammal House enclosures were painted in pastel colors and further enhanced by tinted lights. Many compartments in both the diurnal and Red Light Room sections have been decorated with artificial foliage and artificial rock, the latter constructed by Curator Davis, Assistant Head Keeper Mario Rolla and Keeper Cosmo Barbetto.

Mr. Davis has drawn up preliminary designs for the expanded African continental exhibit and a new World of Darkness building.

RESEARCH

The first half of the year was largely occupied with the trial-and-error business of adjusting the activity cycles of small mammals over an increasingly broad range of species, and then refinement of the techniques as the Red Light Room was actually ready to receive its inmates. We are now much interested in the possible use of varying day-night periods to control breeding in mammals.

Research into exhibition techniques has produced methods of fabricating simulated natural objects—rocks, tree-trunks, and the like—for habitat exhibits. These have been combined with some novel painting effects to make compartment walls less obtrusive.

The Department cooperated with researchers from the University of Florida, Yale, Duke, Cornell and Tulane Universities and the Albert Einstein College of Medicine. Dead specimens of particular interest were sent to the American Museum of Natural History.

OTHER ACTIVITIES

Mr. Davis attended the annual meetings of the American Society of Mammalogists in Urbana, Illinois, and the American Association of Zoological Parks and Aquariums in Rochester, New York. At the latter he presented a paper and film on nocturnal exhibition and was appointed to the Planning, Design and Construction Committee. On January 11 he attended a meeting with representatives of the United States Fish and Wildlife Service, Department of Agriculture, United States Public Health Service and Bureau of Customs, and representatives of five other zoos, to discuss proposed federal regulations governing the importation of wild animals.

PUBLICATIONS (MR. DAVIS)

Red Means Go. *Animal Kingdom*, LXIV (4): 11-118.

Whale. *Encyclopedia Americana*.

Discovery of the Longtail Shrew in New Jersey. *New Jersey Nature News*, XVI (4): 115-116.

Getting Acquainted with Mammals. In "Getting Acquainted with Nature," J. G. Ferguson and Associates, in press.

SUMMARY

More economical use of space within the Mammal Department has enabled us to increase our species representation without an undue increase in numbers of individuals. A new kind of animal exhibition was introduced, enabling us to exhibit active nocturnal species for the first time, and the use of artificial materials to produce habitat settings, along with judicious mixing of species, has resulted in more meaningful exhibits. The department continues to expand its production of general information labels.

FORMS NEW TO THE COLLECTION, ACQUIRED IN 1961

Indian Pangolin—*Manis crassicaudatus* Gray
Silky Pocket Mouse—*Perognathus flavus* Baird
Apache Pocket Mouse—*Perognathus apache* Merriam
Southern Plains Wood Rat—*Neotoma cinerea orolestes* Merriam
Bushy-tailed Wood Rat—*Neotoma cinerea fusca* True
Garden Dormouse—*Eliomys quercinus* Linnaeus
Striped Palm Squirrel—*Funambulus palmarum* Linnaeus
Franklin's Ground Squirrel—*Spermophilus franklini* (Sabine)
Least Weasel—*Mustela rixosa rixosa* (Bangs)
Small Malayan Mouse Deer—*Tragulus javanicus* Osbeck

CENSUS OF MAMMALS
December 31, 1961

<i>Orders</i>		<i>Species & Subspecies</i>	<i>Specimens</i>
MARSUPIALIA	Kangaroos, Phalangers, Opossums, etc.	5	12
INSECTIVORA	Moles, Shrews, Hedgehogs, etc.	2	2
CHIROPTERA	Bats	1	1
PRIMATES	Apes, Monkeys, Lemurs, Marmosets, etc.	50	110
EDENTATA	Armadillos, Sloths, Anteaters.	3	3
PHOLIDOTA	Pangolins	1	1
TUBULIDENTATA	Aardvarks	1	1
RODENTIA	Squirrels, Beavers, Mice, Porcupines, etc.	31	90
CARNIVORA	Bears, Raccoons, Cats, Dogs, Otters, etc.	39	93
PINNIPEDIA	Seals, Sea Lions, Walruses.	4	11
PROBOSCIDEA	Elephants	3	4
PERISSODACTYLA	Horses, Tapirs, Rhinoceroses	7	11
ARTIODACTYLA	Cattle, Sheep, Antelopes, Camels, Giraffes, Deer, Swine, Hippopota- muses	51	235
	TOTALS	198	574

Summary: Orders, 13; Species & Subspecies, 198; Specimens, 574.

DEPARTMENT OF BIRDS

WILLIAM G. CONWAY, *Curator*

GRACE DAVALL, *Assistant Curator*

JOSEPH BELL, *Head Keeper*

LEE S. CRANDALL, *General Curator Emeritus*

WILLIAM BEEBE, *Honorary Curator*

THE SOCIETY'S BIRD COLLECTION included 640 species and 1,571 specimens at the end of 1961. Twenty-four orders were represented.

THE COLLECTION

While 634 birds were acquired during the year, the significance of donations and of exchanges with other institutions was reflected in the fact that only 168 were purchased. Eighty specimens were bred and reared at the Park.

Thirty-four species new to the collection, mostly gifts from Edward Marshall Boehm, a Patron of the Society, were added. Especially noteworthy were a pair of prehistoric-looking Tasmanian Water Hens, presented by Basle Zoo, and the first Laminated-billed Toucan to be seen in an American zoo. Our toucan collection continues to be the world's finest, and with the touraco, waterfowl and crane collections, is being developed in order to provide material for some special exhibits and display experiments during 1962. An effort will be made to assess the impact of several new techniques upon our visitors. A Trenton aviculturist, Richard Pistell, made a notable donation of 115 waterfowl of 45 species. As an initial part of New York-Tokyo cultural exchanges, we received a hand-reared Manchurian Crane in exchange for several mammals and birds which had been bred here. The Manchurian or Sacred Crane is now among the world's rarest birds, though efforts by Japanese conservationists have resulted in a slow build-up in its numbers in recent years.

Serious outbreaks of botulism depleted the dabbling and diving duck collections. More than 90 birds were lost at Wildfowl Pond and at the Marsh Garden. As in past years when botulism has appeared,

free-flying Mallards were first noted dying along nearby Bronx River, and the weather was hot and humid. The two major outbreaks occurred on the display ponds during the night, as usual, following a heavy rainfall. No suspicious decaying carcasses or vegetation could be found, and the source of the toxin remains a mystery. Prompt administration of anti-toxin by the Veterinarian resulted in a high rate of recovery for those specimens which were found still alive and could be treated.

Despite such calamities, the indications of bird life expectancy from specimens now living at the Zoological Park are gratifying. Arrival dates for a few of our established birds as of December 31, 1961, are:

SOME CURRENT LONGEVITIES—1961

	Arrived
Azure Jay (<i>Cyanocorax caeruleus</i>).....	1925
Goffin's Cockatoo (<i>Cacatua sanguinea goffini</i>).....	1932
Violet-necked Cassowary (<i>Casuaris c. aruensis</i>).....	1935
European Crane (<i>Grus g. grus</i>).....	1937
Eastern Black-backed Pelican (<i>Pelecanus c. conspicillatus</i>).....	1939
Crowned Eagle (<i>Stephanoaetus coronatus</i>).....	1939
Razor-billed Curassow (<i>Mitu mitu</i>).....	1939
Orange-naped Fruit Pigeon (<i>Ducula aenea paulina</i>).....	1940
Livingstone's Touraco (<i>Tauraco l. livingstonii</i>).....	1941
Ruanda Double-collared Sunbird (<i>Cinnyris afer graueri</i>).....	1949
Emerald-throated Hummingbird (<i>Sericotes h. holosericeus</i>).....	1953
Garnet Hummingbird (<i>Eulampis jugularis</i>).....	1953

During the year a Javan Rhinoceros Hornbill (*Buceros rhinoceros silvestris*) died after 24 years in the collection; a King Vulture (*Sarcophaga papa*) after 30 years; and a Hyacinthine Macaw (*Anodorhynchus hyacinthinus*) after 32 years and 2 months.

Vandalism to the living collection assumed serious proportions; 57 birds were lost, including a James's Flamingo. It was deemed necessary to remove a number of specimens from exhibits where special protection cannot be given. Unsupervised boys account for most of this problem.

THE BREEDING PROGRAM

Some 80 species deposited 1,238 eggs, but we attempted to incubate and rear only a fraction of them. Breedings of this magnitude speak well for the condition of the collection. Most of the program's effort was of a research nature, although several especially interesting species were reared. Eight Oriental Pratincoles, a peculiar swallow-like shorebird, were successfully raised. They were the first bred anywhere. Other especially interesting breedings were Argentine

Lapwing, Spotted Tinamou, Superb Starling and, as usual, several species of waterfowl. Two birds distinguished themselves as egg layers: a Harlequin Quail deposited 113 eggs and a Bobwhite 93. The incubation program was greatly aided by the acquisition of a modern automatic incubator, and in general we gained much new technical information.

PHYSICAL IMPROVEMENTS

Several minor improvements were accomplished in bird exhibits. An attempt was made to eliminate certain drainage conditions believed to be responsible—at least in part—for the botulism epidemics among the waterfowl. A new drain basin was installed at Wildfowl Pond and the water level lowered. The sides of Marsh Garden were raised, and loose stones removed. The Duck and Goose Paddocks are undergoing total renovation and will become part of the eventual South American geographic area. Electrical service to the Large Bird House was improved, but the proposed new Aquatic Bird House planning continued to drag through various city approval schedules with still no construction in sight. Two years of delays now appear to have endangered the budget. The Curator began detailed planning for a new building, replacing the Main Bird House, to be called "The World of Birds."

RESEARCH

The Curator's priority responsibilities as Director have made the initiation of new research projects impractical, and experimental work has faltered badly. Observational study continues on several projects, including a comparative study of flamingo behavior, cyclic ovulation in southern hemisphere birds and determinant and non-determinant egg laying. Considerable practical research into experimental duck brooding, movement as a factor in the incubation of wild waterfowl eggs, and exhibition techniques, was conducted. Improvements in rations for hummingbirds, sunbirds and flamingos were instituted.

As usual, the Department cooperated in the research programs of many other institutions.

PUBLICATIONS (MR. CONWAY)

In Quest of the Rarest Flamingo. *National Geographic Magazine*, 120 (1): 91-105.

Hummingbirds with Wrinkles. *Animal Kingdom*, LXIV (5): 151-154.

The Oriental Pratincole: Non-determinant laying and Artificial Rearing at the New York Zoological Park. *Avicultural Magazine*, 67 (6): 194-195.

Breeding of the Tacazze Sunbird (*Nectarinia tacazze*) at the New York Zoological Park. *Avicultural Magazine*, 67 (6): 173-174.

OTHER ACTIVITIES

Our flamingo film, "To the High Andes for the Rarest Flamingo," was used by Curator Conway for several lectures during the year, including a February presentation to the Miami Zoological Society. He continued to act as technical adviser on bird exhibits for various Zoological Parks, ranging from New Delhi to Frankfurt. The Curator appeared on both radio and television programs during the year, and also presented a paper on Zoological Society operation of a Zoo to the American Association of Zoological Parks and Aquariums. He became Chairman of the Conservation Committee of the American Association of Zoological Parks and Aquariums, and continued to act as Secretary for the Pension Fund of the Zoological Society.

During the summer, the Assistant Curator examined zoos in Great Britain, France and Italy. With Trustee Robert Goelet, Mr. Conway made a 1,400-mile trip through the pampas, Patagonian Plateau, and into the foothills of the Andes in quest of future collecting sites and to record in color movies some of Argentina's spectacular bird life.

SUMMARY

The Society's bird collection has now been equalled, in the United States, by that of the San Diego Zoological Society. With the exception of our 1950 Penguin House, the Department's major exhibits were constructed prior to 1910, and the quality of our bird displays, in terms of presentation, labelling and habitat, is seriously limited by the vintage of the exhibition buildings. However, the proposed new Aquatic Bird House and the World of Birds building are planned to present the finest live bird exhibits anywhere.

Our breeding program, which has led to the successful propagation of nearly 60 species, is seriously hampered for lack of a specific bird breeding and rearing installation.

Insufficient staff prevents the Department from utilizing its extraordinary research opportunity and producing significant new work.

FORMS NEW TO THE COLLECTION, ACQUIRED IN 1961

Zabele's Red-footed Tinamou—*Crypturellus noctivagus zabele* (Spix)
Greater Magellan Goose—*Chloephaga picta leucoptera* (Gmelin)
Hottentot Teal—*Anas punctata* Burchell
Greater Brazilian Teal—*Amazonetta brasiliensis ipecutiri* (Vieillot)
Tasmanian Swamp Hen—*Tribonyx mortierii* DuBus
Black-winged Lapwing—*Stephanibyx melanopterus minor* Zedlitz
Black-winged Stilt—*Himantopus himantopus himantopus* (Linnaeus)
Red-chested Cuckoo—*Cuculus solitarius* Stephens
African Cuckoo—*Cuculus canorus gularis* Stephens
Jardin's Coronet—*Boissonneaua jardini* (Bourcier)

Black-tailed Trogon—*Trogon melanurus mesurus* (Cabanis and Heine)
 West African Broad-billed Roller—*Eurystomus glaucurus afer* (Latham)
 Scimitar-bill Wood Hoopoe—*Rhinopomastus cyanomelas schalowi* Neumann
 White-eared Barbet—*Smilorhis leucotis leucotis* (Sundevall)
 Lemon-rumped Tinker-barbet—*Pogoniulus bilineatus mfumbiri* (Ogilvie-Grant)
 Laminated-billed Toucan—*Andigena laminirostris* Gould
 Azara's Long-tailed Manakin—*Chiroxiphia caudata* (Shaw and Nodder)
 Punjab Gray Titmouse—*Parus major planorum* Hartert
 Vigor's Black-crested Titmouse—*Parus melanolophus* Vigors
 Samamisian Redstart—*Phoenicurus phoenicurus samamisticus* (Hablizl)
 Kashmir Redstart—*Phoenicurus ochruros phoenicuroides* (Horsfield and Moore)
 Blue-tailed Wagtail—*Motacilla flava flava* Linnaeus
 Asiatic White Wagtail—*Motacilla alba dukhunensis* Sykes
 Transvaal Puff-backed Shrike—*Laniarius ferrugineus transvaalensis* Roberts
 Gray-headed Bush Shrike—*Malaconotus blanchoti hypopyrrhus* Hartlaub
 Southern Fiscal Shrike—*Lanius collaris pyrrhostictus* Holub and Pelzeln
 Meve's Long-tailed Glossy Starling—*Lamprotornis mevesii mevesii* (Wahlberg)
 South African Chestnut-winged Starling—*Onychognathus morio morio*
 (Linnaeus)
 Sharpe's Starling—*Pholia sharpii* (Jackson)
 Berlepsch's Honey Creeper—*Dacnis berlepschi* Hartert
 Black-billed Weaver—*Heterhyphantes melanogaster stephanophorus* Sharpe
 Abyssinian Crimson-wing—*Cryptospiza salvadorii kilimensis* W. L. Sclater
 Yellow-backed Waxbill—*Pytilia afra afra* (Gmelin)
 Blue-bellied Calliste—*Tanagrella callophrys* (Cabanis)
 Bolivian Yellow-bellied Calliste—*Tangara mexicana boliviana* (Bonaparte)
 Western Black and Green Calliste—*Tangara nigroviridis consobrina* Hellmayr
 Oriole Finch—*Linurgus olivaceus keniensis* Van Someren

CENSUS OF BIRDS December 31, 1961

Orders	Species & Subspecies		Specimens
SPHENISCIFORMES	Penguins	8	24
STRUTHIONIFORMES	Ostriches	1	2
RHEIFORMES	Rheas	1	1
CASUARIIFORMES	Cassowaries and Emus	2	2
TINAMIFORMES	Tinamous	4	9
PELECANIFORMES	Pelicans, Cormorants, etc.	8	9
CICONIIFORMES	Herons, Ibises, Storks, etc.	20	29
PHOENICOPTERIFORMES	Flamingos	6	39
ANSERIFORMES	Swans, Ducks, Geese and Screamers	100	456
FALCONIFORMES	Vultures, Hawks and Eagles	33	47
GALLIFORMES	Quail, Pheasants, etc.	38	135
GRUIFORMES	Hemipodes, Cranes, Trumpeters, etc.	25	69
CHARADRIIFORMES	Plovers, Sandpipers, Gulls, etc.	27	77
COLUMBIFORMES	Pigeons, Doves and Sandgrouse.	27	54
PSITTACIFORMES	Parrots, etc.	24	35
CUCULIFORMES	Touracos and Cuckoos	9	12
STRIGIFORMES	Owls	8	14
CAPRIMULGIFORMES	Frogmouths, Nighthawks, etc.	2	2
APODIFORMES	Hummingbirds	9	10
COLIIFORMES	Mousebirds	2	2
TROGONIFORMES	Trogons and Quetzals	2	5
CORACIIFORMES	Kingfishers, Hornbills, etc.	15	24
PICIFORMES	Barbets, Toucans and Woodpeckers	29	55
PASSERIFORMES	Perching Birds	240	459
	TOTALS	640	1,571

Summary: Orders, 24; Species & Subspecies, 640; Specimens, 1,571.

DEPARTMENT OF REPTILES

HERNDON G. DOWLING, *Curator*

STEPHEN SPENCOOK, *Head Keeper*

MORE KINDS OF REPTILES and amphibians were in the collection at the end of the year than on any previous annual census date in the Zoological Park's history. We counted 742 specimens of 269 species and subspecies—and this was not the actual high for the year, since the collection normally builds up during the summer. Thanks to present-day methods of fast transportation, the size of a collection is essentially limited only by exhibition space.

THE COLLECTION

An even 900 specimens were received from outside sources, but for some inexplicable reason the number of gifts was down to 532 from the record-breaking total of 856 in 1960. We were glad to note that the number of crocodilians donated—mostly small South American Caimans—dropped to 24.

Gifts and exchanges accounted for most of the animals received. Donors included Dr. Carl Gans, University of Buffalo; John Phipps, a Trustee of the Zoological Society; Tom Harrisson, Sarawak Museum; and Father Richard Goris, Tokyo. We received welcome specimens from the American Museum of Natural History, the Buffalo Zoo, the Budapest Zoo, the Frankfurt Zoo, the Maribor Aquarium in Yugoslavia, the San Diego Zoo and the Steinhart Aquarium in San Francisco.

Unusual additions were a Bornean Earless Monitor (*Lanthanotus borneensis*), the first living specimen seen outside Borneo; a group of Olms (*Proteus anguinus*), blind white salamanders from caves in Yugoslavia; two Aldabra Tortoises (*Geochelone gigantea*) from islands in the Indian Ocean; and a Spurred Tortoise (*Geochelone sulcata*) from Africa.

A major loss was that of one of our two Saddleback Tortoises (*Geochelone elephantopus ephippium*) which had been collected on Duncan Island in the Galapagos by Dr. C. H. Townsend in 1928. It died on August 16, apparently as a result of burns received when a heating coil short-circuited in a temporary shelter. A male African Python

(*Python sebae*), the father of 41 youngsters hatched in 1960, died unexpectedly on September 9, and a Bushmaster (*Lachesis muta*) died on December 23 after the very long life of 17 months and 2 days in the collection. Its loss was apparently due to the failure of an air conditioner and we have reason to believe that adequate air conditioning, being installed at the year's end, will enable us to make extraordinary advances in the maintenance of this impressive reptile.

It is good to be able to report that all individuals that comprised the Department's longevity list for 1960 are still alive—and one year older. To this list we may now add the Tuatara (*Sphenodon punctatus*), perhaps the rarest animal in the collection, which had been with us five years on January 21, 1961, and was still in good health at the end of the year.

RESEARCH

Pressure of other duties relegated research to a minor place. Field work by the Curator in Trinidad was cancelled because of the strike at the Zoological Park in the spring, but work continued at a distance on a checklist of the amphibians and reptiles of that island. Observations were extended on brooding pythons and the maintenance of exotic reptiles under captive conditions. The Curator's study of the systematics and relationships of the ratsnakes was continued with support from the National Science Foundation.

PUBLICATIONS (DR. DOWLING)

Snakes. *American People's Encyclopedia Yearbook for 1960*.

The Tortoises. *Animal Kingdom*, LXIV (3): 66-75.

Serpents of the Night. *Herpetological Digest*, 1 (1): 3-5.

Reptiles After Dark. *Animal Kingdom*, LXIV (4): 119-123.

Our Air-conditioned Bushmaster. *Animal Kingdom*, LXIV (5): 155-156.

How Old Are They and How Big Do They Grow? *Animal Kingdom*, LXIV (6): 171-175.

PERSONNEL

The addition of a six-months Society payroll line has given the Reptile House adequate keeper coverage for the first time. With five keepers (including the Head Keeper), it is now possible to have three men in the Reptile House each day—as long as no one is absent because of sickness or for some other reason.

PHYSICAL IMPROVEMENTS

The Tropical Habitat enclosure that was developed from the former Komodo Monitor room in the east end of the Reptile House has been completed by the addition of tanbark to the floor, a large number of artificial plants, repainting of the background and revised lighting. Several smaller exhibits have been given a comparable facelifting.

Renovation of the old Panda Moat east of the Great Apes House has begun. It will become a Galapagos exhibit, and we hope to show Land and Marine Iguanas, giant tortoises and perhaps some of the typical birds of the Galapagos Islands in the coming summer.

OTHER ACTIVITIES

Curator Dowling represented the Zoological Park and the American Society of Ichthyologists and Herpetologists at a meeting with the U.S. Fish and Wildlife Service in January, at which new rules for the importation of exotic animals were discussed. In August he attended the annual meetings of the American Institute of Biological Sciences in Lafayette, Ind., and visited the Lincoln Park and Brookfield Zoos in Chicago. He attended the annual meetings of the American Association for the Advancement of Science in Denver and visited the Denver and Cheyenne Mountain Zoos.

Among other talks, Dr. Dowling presented a seminar at the Behavior Section of the American Museum of Natural History on his observations of the temperature relations and habits of brooding pythons.

SUMMARY

The collection set a new record for the number of species and subspecies of reptiles and amphibians exhibited. The Tropical Habitat exhibit was completed, a new Galapagos Exhibit was under construction and the former summer keeper position was extended to a full year's payroll line.

CENSUS OF AMPHIBIANS AND REPTILES December 31, 1961

Orders	AMPHIBIA	Species & Subspecies	
		Specimens	
CAUDATA	Salamanders	10	32
SALIENTIA	Frogs and Toads	26	56
	REPTILIA		
TESTUDINES	Turtles	73	174
CROCODILIA	Alligators and Crocodiles	15	59
RHYNCHOCEPHALIA	Beakheads (<i>Sphenodon</i>)	1	1
SQUAMATA			
SAURIA	Lizards	29	66
SERPENTES	Snakes	115	219
VARIOUS ORDERS	Research specimens & surplus.....		135
	TOTALS	269	742

Summary: Orders, 6; Species, 269; Specimens, 742.

ANIMAL HOSPITAL

CHARLES P. GANDAL, *Veterinarian*

BY AND LARGE, the health of the collection was good in 1961. There were a few serious losses, one or two made all the more serious by the difficulty of replacing animals from certain parts of the world, but no more than could be expected in a collection so large and varied. The only outbreak of really catastrophic proportions was that of botulism on the Wildfowl Pond and the Marsh Garden.

THE BOTULISM OUTBREAK

Botulism, commonly known as food poisoning, is a frequently fatal disease to which waterfowl are particularly susceptible and whose origin may be decaying animal or even vegetable matter harboring the toxin-producing organism *Clostridium botulinum*. It was first observed in the Zoological Park during the heat of the summer, when wild ducks were found dead or dying along the Bronx River. Within a few days it was reported on our exhibition waters.

In the past we have not placed much reliance on Botulinus anti-toxin because of unsatisfactory clinical experience, but this summer's attack was so massive that we were impelled to give it another try. All birds presented for treatment were given injections of trivalent Botulinus antitoxin and free access to fresh water. Those that had not recovered sufficiently well to be walking by the second day were given repeat injections. More than 90% made full recovery. These were not selected cases, but included all birds alive at the time of initial examination, many of which were showing cervical paralysis and other advanced symptomatology.

CASES OF ESPECIAL INTEREST

Several individuals in a Japanese Macaque group in an outdoor compartment of the Monkey House showed recurring gastrointestinal symptoms with gradual debility and convulsions. All indications pointed to heavy metal poisoning, yet paints in the compartment were non-lead and non-toxic. Close inspection revealed that the macaques had picked at the walls and exposed the original lead paint put on twenty years ago, which they had been eating. One member of the

group died but the other four, including a baby, were successfully treated as symptoms developed.

A male Cheetah suddenly became ataxic, with symptoms similar to those seen in thiamin-deficient domestic cats. It developed that this animal had a fondness for smelts, and was given an excessive number of them by keepers as a "treat." Since smelts are high in thiaminase, which results in the destruction of thiamin, a deficiency condition resulted. Injections of thiamin and B-complex vitamins and subsequent oral administration of thiamin led to recovery.

A Demoiselle Crane from the African Plains was found suffering from acute respiratory distress secondary to trauma and shock. A resuscitator of the type used for human beings was employed in combination with an endotracheal tube, and these kept the bird alive for the first critical hours. It was released the following day.

A Barbary Ape escaped from the Monkey House and fled through the trees east of the building. A single dose of the muscle-paralyzing succinylcholine from the injection gun brought it down unharmed. The gun was also used successfully to immobilize deer for crating, to immobilize three elk for treatment of infected wounds, to administer antibiotics to a Camel with a leg abscess, a Buffalo with an eye infection and hormones to an Indian Rhinoceros.

A female Wallaby was reported with a severe foot infection. Since her baby was just beginning to show himself in the pouch, we feared that she would reject him if we caught her up for treatment. Because of the severity of the infection, she had to be caught up—and as expected, displaced the baby from the pouch. The mother was treated under a combination of promazine and meperidine sedation and the baby was replaced in the pouch without objection from the mother. The infection was subsequently treated several times, each time following mild sedation, and after three weeks mother and pouched young were returned to the Kangaroo House.

All three Gorillas required more than routine care for the first time in several years. Sumaili, the Mountain Gorilla, suffered a severely lacerated foot while playing with her Lowland companion, Mambo, and two months later incurred a flesh wound on her arm in the same manner. Oral antibiotics were given, and the wounds were treated by topical medication applied from a distance with a pressure oil can. The Lowland Gorilla Oka developed a severe intestinal balantidium infection which responded to a week's medication. Mambo sprained his left ankle but recovered without incident.

Three young Orang-utans awaiting exhibition in the Animal Nursery in the spring of 1962 required an extraordinary amount of treatment and pampering. They were tested for tuberculosis, wormed

against ascarids, hookworms, strongyloides and several intermittent attacks of balantidiasis, and were treated for colds and upset stomachs.

The aged Tiger Rajpur, born in the Zoological Park in 1944 and the father of 32 cubs, was euthanized in October after he showed progressive chronic arthritis and senility. His mate, Dacca, survives.

PREVENTIVE MEDICINE

On the theory that it is often easier—and certainly much better—to prevent disease than to treat it, many newly-acquired specimens were quarantined on arrival, 11 mammals and 8 birds were tuberculin-tested, 3 birds were blood-tested for psittacosis and 20 mammals were vaccinated against panleukopenia and/or canine distemper and canine hepatitis.

Keeping ahead of parasite build-up is an important part of any preventive medicine program and to this end 337 stool samples were examined in the Hospital laboratory. Vermifuge treatments were administered as required. The total was 242. Dithiazanine iodide was found valuable in strongyloides infections of primates, and effective against other intestinal nematodes; good success was also obtained with disophenol, a new injectable vermifuge for hookworms. It was used in primates as well as carnivores.

CONSULTATIONS

With Dr. Theodore Kazimiroff, our dental consultant, visits were made to the New York Aquarium to recommend treatment for an aggravated sinus condition in the female Walrus Ookie.

The Veterinarian was consulted on numerous occasions by the New York City menageries at Central Park and Prospect Park.

FIRST AID

In August a Reptile House keeper was bitten by a Cottonmouth Moccasin. Within six minutes the Veterinarian made incisions and applied suction. The keeper was then removed to Fordham hospital, along with a supply of antivenin. On the way he was tested by the Veterinarian for sensitivity to horse serum to confirm his non-reactive state. A total of 25 cc. of antivenin was given at the hospital and the patient was discharged the following day. No permanent after-effects were noticed except a newly-acquired sensitivity to horse serum.

There were 1,910 cases requiring first aid, of which 810 involved employees and 1,100 visitors. Twenty-seven members of the Zoological Park Blood Bank donated blood and 19 pints were distributed among 12 recipients.

SPECIMEN DISTRIBUTION

Ninety-eight specimens of tissue, blood or other material were sent to cooperating investigators in 11 institutions.

OTHER ACTIVITIES

Dr. Gandal was re-elected President of the American Association of Zoo Veterinarians. He was appointed to the Program and Public Relations Committees of the Westchester County Veterinary Medical Association. He attended the annual meeting of the American Veterinary Medical Association and the American Association of Zoo Veterinarians in Detroit, the mid-western meeting of the American Association of Zoological Parks and Aquariums and the annual veterinary conference at Cornell University.

PUBLICATIONS (DR. GANDAL)

Handling and Treatment of Common Exotic Mammal Pets. (With W. P. Heuschele.) *Journal of the American Veterinary Medical Association*, 138 (11).

Removal of an Intra-abdominal Tumor of a Pigeon by Radical Incision. *Avian Diseases*, V (3).

Nematodes and Cestodes from the Australian Monitor, *Varanus gouldii*. (With H. W. Stunkard). *Zoologica*, 46 (14): 161-166.

Veterinary Medicine, Science and Human Health. (Compilation on Zoological Park Veterinary Medicine). U. S. Senate Committee Print.

PAPERS PRESENTED

The Care, Handling and Treatment of Unusual Pets. Ontario Veterinary Medical Association; Annual Meeting, Toronto.

A Field Technique for Pinioning Birds. Annual Cornell Veterinary Conference, Ithaca.

The Care and Treatment of Exotic Pet Animals. Pennsylvania State Annual Veterinary Meeting, University Park, Penna.

STATISTICS

The Hospital Laboratory handled 353 laboratory specimens involving a variety of procedures, including antibiotic sensitivity testing, stool examinations for parasites, bacteriological and mycological cultures and blood counts.

Birds hospitalized numbered 9 for 197 days and mammals 58 for 1,547 days. Outpatient treatments included 273 mammals, 155 birds and 63 reptiles.

In the mortality tables that follow, "Total in Collection" is arrived at by adding to the census at the beginning of the year all animals acquired by purchase, exchange, gift or born alive. Animals disposed of alive by sale or exchange during the year are not deducted. No acclimatization period following birth or arrival is allowed.

MORTALITY TABLE

MAMMALS

<i>Year</i>	<i>Total in Collection Throughout the Year</i>	<i>Died</i>	<i>Mortality Percentage</i>
1961	724	128	17.68
1960	737	122	16.55
1959	718	106	14.76
1958	545	117	21.46
1957	679	130	19.14
Totals	<u>3403</u>	<u>603</u>	

Average mortality for past 5 years.....17.71

Average mortality for past 20 years.....17.53

BIRDS

<i>Year</i>	<i>Total in Collection Throughout the Year</i>	<i>Died</i>	<i>Mortality Percentage</i>
1961	2339	437	18.68
1960	2119	273	12.88
1959	2051	343	16.72
1958	1713	348	20.31
1957	1870	309	16.52
Totals	<u>10092</u>	<u>1710</u>	

Average mortality for past 5 years.....16.94

Average mortality for past 20 years.....16.21

CONSTRUCTION AND MAINTENANCE

CHARLES B. DRISCOLL, *Superintendent of Operations*

GEORGE RUSSELL, *Assistant Superintendent of Construction*

WILLIAM ALLEN, *Assistant Superintendent of Maintenance*

DESPITE THE HEAVY SNOWS in January and February, the strike in April and May and considerable damage caused by the hurricane Esther in September, refinements and improvements were made in operation and maintenance of the Zoological Park.

Clerical offices of the Facilities Department were consolidated and expanded in the old Service Building. A new office was added for the Purchasing Department in this building and the Head Keeper's apartment was modernized.

Construction was started by outside contract on the Animal Nursery in Children's Zoo on September 19. At the year's end it was approximately 40% complete. Due to the high bids for electric and sewer work for this building, the job was done by Park forces at a saving of approximately \$6,000.

Purchase of a Case tractor with backhoe and front end loader at a cost of \$8,000 made possible a great amount of work which normally would be contracted out. Besides the installation of the new sewer line for the Animal Nursery, 500 feet of new water lines were installed in the Asiatic Deer corrals, new lines replaced old at the north end of Baird court, Raccoon and Otter moats, African Plains Lion Island and Bird Rock. Site work was also started at the old Duck Paddocks north of the Flight Cage by removing partition fences and a small brick structure.

In addition to the hundreds of maintenance work orders processed, the following improvements were made: a new Souvenir Stand was constructed near the ZooBar, new 3-phase electric service brought into the Large Bird House, a new boiler installed in the East Elephant Walk Comfort Station, an oil burner in the Lion House and a new heating system in the Old Panda Building. The north end of the Small Mammal House was converted to a nocturnal exhibit. Painting

jobs included the Antelope House interior, ZooBar, seven tractor train units, corral fences, Small Mammal and Reptile House compartments.

The Maintenance Department re-landscaped the outside entrance to Fordham gate, and a section of Heart Lake, planted a new lawn at the north end of Baird court and set out approximately 75 trees along walks or in corrals to replace those lost because of age or hurricane Esther. Approximately 150 elm trees were given preventive sprayings from early spring through the summer, and a survey was made with recommendations for re-enforcing plantings throughout the Park.

FACILITIES DEPARTMENT

EDWARD KEARNEY, *Manager*

EDWARD QUINN, *Assistant Manager*

NET PROCEEDS OF THE Facilities Department are restricted to the purchase of animals and the improvement of the Zoological Park. Operations, therefore, which substantially increases Facilities revenues are encouraged, and a notable example was the new souvenir stand adjacent to the ZooBar Restaurant. Much larger than the original stand, it produced gross sales 30% larger than the previous year's. As a result of this object lesson, we are similarly enlarging the souvenir stand next to the Sea Lion Pool. The public's demand for gift and novelty merchandise shows no sign of abating and is, indeed, increasing.

Thirty-eight old and unsafe rowboats were discarded and fifty new plywood boats were added to the fleet on the Bronx River. However, thirty boats arrived too late to be put into service and the operation was hampered somewhat.

MISCELLANEOUS OPERATIONS AND SERVICES

CHILDREN'S ZOO. Over a quarter of a million children and adults visited the Children's Zoo this past season, its twenty-first. These included 4,166 free admissions of school children from low economic areas of the city. Operation of the Children's Zoo continued under the

administration of Assistant Curator Grace Davall, with the assistance of Zooperintendent Corrine Dalsgaard.

TRACTOR TRAINS. Seven trains were in operation, and produced a gross revenue of \$61,913.50.

FARM-IN-THE-ZOO. Opening was delayed to June 4 because of the spring strike, but nevertheless the Farm had 77,537 visitors. Miss Bonnie Sue Houghtaling, the "American Dairy Princess," was featured at the opening. New exhibits included electric, forced draft, automatic-turning incubator, a standard-bred mare and foal and a vegetable garden put in by Farmer James Coder. The Farm continued under the management of the Veterinarian.

RIDING TRACK. The largest number of rides ever given on the track in a single day was recorded on Memorial Day when 4,606 children were carried. The year's rides totaled 270,045. The riding Track again operated under the guidance of Trackmaster Frank Beehn, and was administered by the Veterinarian.

THE AQUARIUM

THE DIRECTOR'S REPORT

CHRISTOPHER W. COATES, *Director*

THE INITIAL building of the New York Aquarium at Coney Island was intended to be the beginning of an extremely large and beautiful structure, the ultimate in *formal* aquarium design. Our experiences over the past five years in the operation of Phase I, as it was called, combined with the trend of aquatic showmanship (exhibition), as well as the fantastic heights to which building costs have risen, suggested that we might reconsider our basic plan. We have been making some modest experiments to test public reaction—such as the Tri-pool and the outdoor cold water systems. We think that our newer plan, for a central building with a number of specialized satellite buildings, is a far more suitable approach to modern operation.

Presently under construction is the very large open-air Polar Bay. This is a complex of two exhibition tanks, one 70 feet long and 40 feet wide and 8½ feet deep, connected through a gate to a pool 30 feet in diameter, for segregation of the animals when necessary, and an off-exhibition pool for treatment of sick animals.

Polar Bay has an underwater viewing chamber 40 feet long. We have tentatively planned a so-called Shark Hall, a building containing very large tanks which can be kept warm for large tropical aquatic creatures.

Another building in the books is a Whale Stadium, consisting of a single pool 120 feet long, 80 feet wide, and more than 20 feet deep—larger than any oceanarium tank presently in existence. A number of secluded satellite pools for training and segregation—should we decide to make demonstrations of the mental ability of the larger sea mammals—are included. Bleachers for the accommodation of large audiences are provided, as well as an exhibition stage. The pool would have two galleries for underwater viewing, a number of large aquariums for holding our constantly increasing collections, and service quarters and offices of which we stand in serious need.

The Whale Stadium interests us particularly because in recent years the world has become increasingly aware of those remarkable

animals, the porpoises, dolphins and smaller whales. Not only has their superior intelligence been exploited in trained animal acts, but they have become the objects of intensive study of their ability to produce a wide variety of sounds and to use these in communicating and in locating and identifying objects in the water. We could not help being aware of the exhibition value of these animals, but living as we do in a climate of wide variation, predominantly cool as far as the water is concerned, we cannot exhibit the most widely known species, the Bottle-nosed Porpoise, without a very considerable enlargement of our plant and facilities to accommodate such large warm water creatures. We have consequently concentrated on temperate or cold water animals that are able to withstand the vicissitudes of our weather. Moreover, our abundant supply of sea water that remains at a constant temperature of 53°F. provides an excellent year-round environment for Arctic and Subarctic aquatic mammals. In effect, it keeps the animals cool in summer and warm in winter.

We have managed, over the years, to solve the secret of raising walruses—Arctic mammals of considerable size and wonderful docility and great rarity. Olaf, our six-year-old male, is almost half-grown, still growing, and larger than any other walrus recorded in captivity. His destined mate, Ookie, has become famous all over the English-speaking world although she is only three and a half years old. Two eight-months-old babies are shaping up well and bid fair to rival both their elders in popularity.

It can be said that our present collection of cold water mammals is the most diversified in the world. Besides the walruses it includes three Belugas, or White Whales, of which there is but one other specimen in captivity, and a number of seals, among which are two Ringed Seals, the first ever exhibited in the western hemisphere. Arctic marine mammals are seldom kept successfully and we believe that we should take full advantage of our opportunities and experiences to learn all we can about them.

AQUARIUM OPERATIONS

JAMES W. ATZ, *Curator*

CARLETON RAY, *Associate Curator*

ROSS F. NIGRELLI, *Pathologist*

AAGE OLSEN, *Superintendent*

CONSTRUCTION OF A new exhibit for aquatic mammals from the Arctic, a filtering plant for the Oceanic Tank and the rebuilding of much of the interior of the Oceanic Tank itself were the three most important developments of 1961.

Closing of the Aquarium by the employees' strike for seven weeks in the spring, and the disruption and inconvenience of construction, seriously affected attendance and we suffered a marked loss as compared to 1960. Paid admissions totaled 193,373, and there were 34,754 free visitors, mostly school children in organized classes. The Oceanic Tank was returned to operation in late August. At the end of the year, the new Walrus exhibit, to be known as the Polar Bay, was well advanced, as was the filtering plant. The latter had been functioning on a trial basis and had demonstrated that it can do a most excellent job in keeping the water in the Oceanic Tank clear and clean. On April 10 the second of our pair of deep, salt water wells was made an integral part of the system. These wells, which can deliver 400 gallons per minute each, have proved themselves invaluable and it is not too much to say they now form the very foundation of the institution.

THE COLLECTION

Two trips to Alaska provided the most important additions to the collections. On May 25 Dr. Ray returned from a two-weeks' stay at Gambell, on St. Lawrence Island, with a female and two male Pacific Walruses and a Ringed Seal, all obtained from Eskimo hunters with the help of Dr. Francis H. Fay and Richard Zinsman of the Arctic Health Research Center in Anchorage. A second Ringed Seal was shipped from Gambell a week later. From August 5 to 27 Dr. Ray led an expedition to Bristol Bay where a male and two female Belugas were captured and subsequently transported to New York non-stop on a special plane. Accompanying this expedition were Seward John-

son, a member of the Zoological Society, and Robert Moore of the National Geographic Society. These collecting trips were carried out with the permission and aid of the Alaska Department of Fish and Game, and the assistance we received from this state agency was essential to their success. The Ringed Seals are the first to be exhibited in the western hemisphere, and there is but one other Beluga in captivity at the present time. On March 16 we received from Quebec Aquarium a male Gray Seal that has accommodated itself well with our two females and with our 1,600-lb. male Atlantic Walrus, with which it shares an outdoor pool.

Through the good offices of Dr. Henry Clay Frick, Trustee of the Society, we obtained a collection of 33 species of marine fishes, invertebrates and plants from Bermuda. Dr. Ray assisted in the collecting of these specimens. Among the fishes was a 7-foot Green Moray, the gift of Director Louis Mowbray of the Bermuda Government Aquarium. Four visits were made to the pound nets of the Sunrise Fish Company at East Islip, three of them principally to obtain food fish for the Belugas. Many of the local species we exhibited were collected by our own men by seining and skin-diving. From Jerry Gasque of the Sea Circus at Asbury Park, New Jersey, we obtained 150 local marine fishes of 15 species, including four Sand Tiger Sharks. Two outstanding specimens were donated by local fishermen: a threadfish by Nunsey Carrado and a 15-lb. Striped Bass by Capt. Herman Huckmeyer. Species of fishes new to our collections included: Long-snouted Butterfly Fish (*Prognathodes aculeatus*), Gold-and-black Angel Fish (*Centropyge bicolor*), Cherub Fish (*C. argi*); Cabezon (*Scorpaenichthys marmoratus*), Rascasse (*Scorpaena* sp.), and Golden Blenny (*Petrosirtes auratus*).

Exhibits of invertebrates have been expanded noteworthy in three new ways. A tropical anemone "garden" has been established in a 1,000-gallon aquarium. Featured in it are the Pink-tipped Anemone (*Condylactis gigantea*) from Florida and the West Indies and the Mediterranean Cerianthus (*Cerianthus dohrni*). The latter was purchased from a dealer in Naples. After several months of experimentation, we placed on exhibition the Upside Down Jellyfish (*Cassiopeia* sp.). Hydroids of this species had been received as an accidental contaminant in a shipment from Florida, and it was found that this coelenterate would pass through its entire life cycle in a relatively small aquarium. This is one of only three species of jellyfishes we know that will live for any length of time in captivity. We are currently experimenting with the spectacular sea anemones, starfishes, molluscs and tube worms found on the West Coast. Representatives of these cold water forms were sent to us by the Steinhart Aquarium.

All indications are that they will thrive in our well water, which maintains a year-long temperature of 53° F.

Several pinnipeds were lost during the year, including one of our baby walruses. The walrus was stricken with acute tracheal bronchitis on October 12 and died the same day. The principal causes of death of our seals have been bacterial and fungal infections, heartworm and the ingestion of foreign objects. We have been greatly aided in our studies of these cases and in the development of prophylactic treatments by Dr. William Antopol, Director of Laboratories and Research and Pathologist in Chief of the Beth Israel Hospital of New York.

RESEARCH

No public aquarium has ever been able to take advantage of more than a small fraction of its potentialities for scientific research. This inability has been felt particularly by our institution which has, over the years, made a greater contribution to scientific knowledge than any other public aquarium. Steps have now been taken to provide us with adequate facilities, the lack of which has formed the greatest obstacle to scientific investigations at the Aquarium. On February 27 we applied to the National Institutes of Health for the sum of \$678,000 which represents one-half the total cost of constructing and equipping a two-story laboratory building that will contain about 20,000 square feet devoted to research. On July 6 we received a memorandum informing us that approval of this application, in the amount of \$623,000, had been recommended by the National Advisory Council on Health Research Facilities. We must now obtain matching funds.

The Department of Marine Biochemistry and Ecology continues to focus its attention on the structure and properties of pharmacologically interesting substances from the sea, and the physiology of corals. Dr. Martin Stempien is studying the histochemistry of mucopolysaccharides and nucleic acids of sponges, and Dr. Thomas Goreau the processes of calcification and growth in Jamaican corals. We received a grant of \$10,800 from the Damon Runyon Memorial Fund in support of Dr. Stempien's work. Dr. Nigrelli spent three weeks at the Zoological Station at Naples through the courtesy of the Director, Dr. Peter Dohrn, and the Chairman of the Department of Biochemistry, Dr. F. Ghiretti. Dr. Nigrelli investigated the effects of the substance produced by the female of the worm *Bonellia* that masculinizes and stops the growth of any larval *Bonellia* coming into contact with it, and he was able to show that this substance has generalized growth-inhibiting properties effective on animals wholly unrelated to *Bonellia*.

Dr. Nigrelli made an early spring inspection tour of trout hatcheries in Idaho and Utah in order to see first-hand the conditions under which large numbers of Rainbow Trout have been found to suffer from a serious liver disease. A descriptive analysis of this puzzling disease by Dr. Nigrelli and Dr. Sophie Jakowska had appeared in *Zoologica* and Dr. Nigrelli's advice was sought by both public and private agencies.

The Genetics Laboratory continues its long-term investigation of the hereditary basis for melanoma in fish and the role of pigmentation in the development of this cancerous growth. The discovery of a platyfish with two genes for potentially neoplastic pigmentation on a single chromosome, instead of the usual one, has provided a new approach to the problem of the relation of gene to tumor. In collaboration with Dr. Milan J. Kopac of New York University, Dr. Sylvia S. Greenberg is analyzing the process of melanogenesis with the aid of radio-active dopa. Other aspects of the production of melanin by cells were studied by Dr. Greenberg at the Bermuda Biological Station where living specimens of the sea-urchin *Diadema* may be obtained. These echinoderms have cells that contain especially large pigment granules. Dr. Klaus D. Kallman, our Research Associate in Genetics, is now in-breeding special, tumor-bearing strains of fishes that will be necessary for his projected melanoma transplantation experiments. The perfection of a method of hypophysectomizing platyfish and swordtails by Dr. John M. Ball of the University of Liverpool now makes it possible to test the late Dr. Myron Gordon's theory that melanoma represents a hormonal deficiency disease.

Dr. Kallman made three collecting trips to Mexico and Texas and obtained living specimens of Couch's Platyfish and the Amazon Mollie. By means of his fin transplantation technique, he is analyzing the genetic structure of various populations of these two species. Dr. Kallman also made two trips to the Entomological Research Center of the Florida State Board of Health at Vero Beach where he worked with Dr. Robert W. Harrington, Jr., transplanting fins between individuals of the parthenogenetic fish, *Rivulus marmoratus*, in order to determine their genetic relationships. With Dr. Grace E. Pickford of the Bingham Oceanic Laboratory of Yale University and Dr. Ball, Dr. Kallman is demonstrating, by combined hypophysectomy and transplantation, the role of the pituitary gland in the salt regulation of the Amazon Mollie.

Work on the basic mechanisms of bioelectrogenesis has been continued at the College of Physicians and Surgeons, Columbia University, under the direction of Dr. David Nachmansohn. This cooperative effort, in which Director Coates has shared for nearly 30 years, uses

the Electric Eel as its principal laboratory animal. The monocellular eel electroplax preparation, developed during the last five years, has been further improved by the addition of new and refined recording methods devised by Dr. Henry B. Higman and Miss Eva Bartels. One of the most outstanding and interesting results has been the demonstration that local anesthetics, which are related in structure to acetylcholine, act as typical antimetabolites and produce their effect by competing with acetylcholine for the acetylcholine receptor protein. These findings open new possibilities in the important medical field of local anesthetics, since knowledge of the mode of action of these drugs may help in the synthesis of more efficient compounds. Work on the acetylcholine receptor protein is also being actively pursued and holds great promise for the understanding of the basic mechanism of nerve activity.

Dr. Ray continued his work on the problems of thermoregulation in the walrus with Dr. Francis H. Fay of the Arctic Health Research Center at Anchorage. A paper is now in the last stages of preparation. Work also continues on growth, metabolism and nutrition in the walrus, which is a comparison of growth rates of wild walrus with the growth rates of animals fed the cream-clam-vitamin formula developed at the Aquarium for the feeding of very young pinnipeds.

PUBLICATIONS

The following scientific and popular articles by members of the staff appeared during the year:

MR. COATES

Conger Eel. *Encyclopedia Americana*, Vol. 7, p. 498.

Minnow. *Encyclopedia Americana*, Vol. 19, pp. 205-206.

Mudskipper. *Encyclopedia Americana*, Vol. 19, p. 594a.

"Balanced" Tank Builds own Biological Cycle. *Fish Culturist*, 41 (4): 28.

Fishes of the World. With James W. Atz. Pp. 1391-1640 of "The Illustrated Encyclopedia of Animal Life." Edited by Frederick Drimmer. Greystone Press, New York.

Weekly column on tropical fish in the *New York World-Telegram and Sun* continued for thirty-first year.

DR. ATZ

The Black Piranha. *Aquarium Journal*, 32 (1): 4-10.

Raising Ookie. *Animal Kingdom*, LXIV (1): 13-22.

Whale Swims Ashore. *Aquarium Journal*, 32 (2): 56-62, 75.

Eyes at the Edge of Two Elements. *Animal Kingdom*, LXIV (2): 55-59.

Fish Without Fathers. *Animal Kingdom*, LXIV (3): 76-79. *Aquarium Journal*, 32 (10): 459-464. *Aquarist and Pondkeeper*, 26 (9): 176-179.

Three Views of the World of Fishes. *Natural History*, 70 (7): 4-7.

Brilliant Reef Fish. *Natural History*, 70 (7): 18-19.

Myron Gordon 1899-1959. *Records of the Genetics Society of America*, No. 30, p. 15.

The New New York Aquarium. *The Aquarium*, 30 (9): 516-518.

Self-inhibition by Captive Fishes through the Water in which they Live. *Drum and Croaker*, No. 4, pp. 5-7. Mimeo.

Literature Summary and Introduction to the Gonadotropins of Fishes. *Abstracts of Symposium Papers, Tenth Pacific Science Congress* [Honolulu], p. 155. Abstract.

DR. RAY

Introduction. Pp. 1-3 of "Report of the Exuma Cays Park Project." Revised Edition of 1961. Edited by Carleton Ray. 39 pp. New York.

A Question in Whale Behavior. *Natural History*, 70 (6): 46-53.

Spawning Behavior and Egg Raft Morphology of the Ocellated Fringed Frogfish, *Antennarius nummifer* (Cuvier). *Copeia*, 1961 (2): 230-231.

Three Baby Walruses and the Smallest Seal. *Animal Kingdom*, LXIV (4): 98-105.

Marine Preserves for Ecological Research. *Transactions Twenty-sixth North American Wildlife Conference*, pp. 323-328.

White Whales for the Aquarium. *Animal Kingdom*, LXIV (6): 162-170.

DR. NIGRELLI

Communication from Dr. Ross F. Nigrelli, Director, Laboratory of Marine Biochemistry and Ecology, the New York Aquarium, Brooklyn, N. Y. Pp. 177-178 of Hearings before the Committee on Interstate and Foreign Commerce, United States Senate, Eighty-seventh Congress, First Session, on S. 901 and S. 1189, Bills to Advance the Marine Sciences, March 15, 16, 17 and May 2, 1961. Government Printing Office, Washington, D. C.

Fish Diseases. Pp. 1407-1415 of "The Merck Veterinary Manual." Second Edition. Edited by O. H. Siegmund *et al.* Merck & Co., Inc., Rahway, N. J.

Fatty Degeneration, Regenerative Hyperplasia and Neoplasia in the Livers of Rainbow Trout, *Salmo gairdneri*. With Sophie Jakowska. *Zoologica*, 46 (4): 49-55.

Effects of Copper Salts on *Fundulus heteroclitus*. With Idelisa Calventi. *American Zoologist*, 1 (3): 347. Abstract.

Effects of Chronic Gamma Irradiation on Adult Newts, *Diemictylus viridescens*. With Sophie Jakowska & A. H. Sparrow. *American Zoologist*, 1 (3): 361-362. Abstract.

Developmental Aberrations in Sea-urchin Eggs Induced by Sponge Extracts. With George D. Ruggieri, S. J., Morris H. Baslow & Sophie Jakowska. *American Zoologist*, 1 (3): 384-385. Abstract.

Further Characterization of Antimicrobial Substances from the Bahamian Sponges *Haliclona viridis* and *Tedania ignis*. With Morris Baslow & Sophie Jakowska. *Abstracts of Papers Presented at the First Interscience Conference on Antimicrobial Agents and Chemotherapy*, pp. 83-84. Abstract.

Additional Radiobiological Studies on Normal and Anemic Newts, *Diemictylus viridescens*. With Sophie Jakowska & Arnold H. Sparrow. *American Zoologist*, 1 (4): 454-455. Abstract.

DR. SOPHIE JAKOWSKA

Syncoelous Parabiosis of Adult Newts, *Diemictylus viridescens*. *American Zoologist*, 1 (4): 454. Abstract.

DR. KLAUS D. KALLMAN

Detection of Gynogenesis in the Viviparous Teleost, *Mollienesia formosa*

(Girard), by Tissue Transplantation. *American Zoologist*, 1 (3): 362-363. Abstract.

Genetic Homogeneity of a Small Isolated Population of Viviparous Fish as Revealed by Tissue Transplantation. *American Zoologist*, 1 (4): 455. Abstract.

DR. THOMAS GOREAU

The Physiology of Skeleton Formation in Corals. IV. On Isotopic Equilibrium Exchanges of Calcium between Corallum and Environment in Living and Dead Reef-building Corals. With N. I. Goreau. *Biological Bulletin*, 119 (3): 416-427. (1960).

On the Relation of Calcification to Primary Productivity in Reef Building Organisms. Pp. 269-285 of "The Biology of Hydra and of Some Other Coelenterates: 1961." Edited by H. M. Lenhoff & W. F. Loomis. University of Miami Press, Coral Gables.

Problems of Growth and Calcium Deposition in Reef Corals. *Endeavour*, 20 (77): 32-39.

DR. K. FRANCE BAKER-COHEN

The Role of the Thyroid in the Development of Platyfish. *Zoologica*, 46 (16): 181-222.

Visceral and Vascular Transposition in Fishes, and a Comparison with Similar Anomalies in Man. *American Journal of Anatomy*, 109 (1): 37-55.

MRS. PAMELA A. MACINTYRE

Spontaneous Sex Reversals of Genotypic Males in the Platyfish (*Xiphophorus maculatus*). *Genetics*, 46 (5): 575-580.

Crossing Over Within the Macromelanophore Gene in the Platyfish, *Xiphophorus maculatus*. *American Naturalist*, 95 (884): 323-324.

Melanoma, Renal Thyroid Tumor and Reticulo-endothelial Hyperplasia in a Non-hybrid Platyfish. With K. France Baker-Cohen. *Zoologica*, 46 (12): 125-131.

PERSONNEL

Director Coates was reappointed Advisory Editor on Ichthyology for *The Encyclopedia Americana*. During the year he appeared on numerous radio and television programs that featured the Aquarium and its exhibits.

Dr. Atz was appointed Lecturer on Biology for the academic year 1961-1962 in the Graduate School of Arts and Science of New York University where he is giving a course in Fish Genetics. At the Tenth Pacific Science Congress, Dr. Atz introduced and summarized a symposium on The Role of Gonadotropins in the Reproduction of Fishes and presented a paper on speciation in the blind cave characins of Mexico.

Dr. Ray became one of the 18 Founding Members of the newly formed American Littoral Society and was appointed to serve on the Committee of Marine Mammals of the American Society of Mammalogists. Dr. Ray was invited to participate in the North American Wildlife and Natural Resources Conference held in Washington

where he spoke on "Marine Reserves for Ecological Research." He also attended the third annual meeting of the Bahamas National Trust at which he was re-elected Secretary.

Dr. Nigrelli attended the 1st International Conference on Protozoology held in Prague in late August and was designated President (Chairman) of the section on Parasitic Protozoa. At the invitation of the New Jersey Veterinary Society, he addressed the annual meeting on the subject of fish diseases. Dr. Nigrelli served as Corresponding Secretary of the New York Academy of Sciences and was reappointed Ichthyopathologist in the Department of Laboratories of the Beth Israel Hospital of New York. During March he made a three-day tour of hatcheries in the Snake River region of Idaho as a consultant on the epidemic liver disease of Rainbow Trout. For the tenth successive school year Dr. Nigrelli gave his course on fish diseases in the Graduate School of Arts and Science of New York University. The new edition of "The Merck Veterinary Manual," which is the most widely used handbook of its kind, contains a section on fish diseases by Dr. Nigrelli.

CENSUS OF THE AQUARIUM December 31, 1961

PHYLUM CHORDATA

CLASS CHONDRICHTHYES—SHARKS, RAYS AND CHIMAERIDS

		Species & Subspecies	Specimens
<i>Orders</i>			
SELACHII	Sharks	2	11
BATOIDEI	Skates and Rays	2	6
CLASS PISCES—FISHES			
CHONDROSTEI	Sturgeons	2	2
ISOSPONDYLI	Herring, Salmon, Pikes.	1	3
OSTARIOPHYSI	Minnows, Characins, Catfishes.	8	15
APODES	Eels and allies	7	21
CYPRINODONTES	Top-minnows	2	40
HEMIBRANCHII	Seahorses and allies.	1	6
BERYCOIDEI	Squirrel Fishes and allies.	1	14
PERCISOSES	Silversides, Mulletts and allies. .	1	1
PERCOIDEI	Spiny-rayed Fishes	34	150
CHAETODONTOIDEI	Butterfly Fishes and allies.	5	10
ACANTHUROIDEI	Surgeon Fishes and allies.	2	3
CHROMIDES	Demoiselles and Cichlids.	15	54
PHARYNGOGNATHI	Wrasses and Parrot Fishes.	4	9
GOBIOIDEI	Gobies and allies.	2	2
CATAPHRACTI	Scorpion Fishes and allies.	7	12
BLENNOIDEI	Blennies and allies.	3	6
PLECTOGNATHI	Trigger Fishes, Puffers and allies	6	15
HETEROSOMATA	Flatfishes	3	28
HAPLODOCI	Toadfishes	1	12
PEDICULATI	Anglers, Batfishes and allies. .	1	1
CLASS REPTILIA—REPTILES			
TESTUDINES	Turtles and Tortoises.	3	10
CLASS AVES—BIRDS			
SPHENISCIFORMES	Penguins	1	10
CLASS MAMMALIA—MAMMALS			
PINNIPEDIA	Seals, Sealions and Walruses. .	6	11
CETACEA	Whales and Porpoises	1	3
PHYLUM PORIFERA—SPONGES	.....	2	15
PHYLUM COELENTERATA			
CLASS SCYPHOZOA—JELLYFISHES	.....	1	20
CLASS ANTHOZOA—SEA ANEMONES	.....	8	110
PHYLUM ANNELIDA			
CLASS POLYCHAETA—BRISTLE WORMS	.....	1	3
PHYLUM ARTHROPODA			
CLASS CRUSTACEA—LOBSTERS AND ALLIES	.....	5	14
CLASS ARACHNIDA—HORSESHOE CRABS AND ALLIES	.....	1	11
PHYLUM MOLLUSCA			
CLASS GASTROPODA—SNAILS	.....	4	17
PHYLUM ECHINODERMATA			
CLASS ASTEROIDEA—STARFISH	.....	3	18
CLASS ECHINOIDEA—SEA URCHINS	.....	1	20
TOTALS		147	683

Summary: Species & Subspecies, 147; Specimens, 683.

GENERAL ACTIVITIES

DEPARTMENT OF TROPICAL RESEARCH

WILLIAM BEEBE, *Director Emeritus*

JOCELYN CRANE, *Assistant Director*

DAVID W. SNOW, *Resident Naturalist*

SIMLA, the Society's Trinidad Field Station, was fully open throughout the year. While the regular staff continued their long-term research on birds, butterflies and crustaceans, visiting workers were concerned with problems of physiology, behavior and ecology in other animal groups, ranging from pirate bugs to fish-eating bats.

STAFF AND GUEST WORKERS

Dr. Snow completed five years' work on the biology of the birds of Trinidad and in the autumn returned to the Edward Grey Institute of Field Ornithology at Oxford. There, where he has library facilities at hand, he commenced the final drafts of eleven technical manuscripts reporting his results. The majority will appear in *Zoologica*. The subject matter of these contributions gives an idea of the scope of the work: a comparative study of the displays of certain manakins from Trinidad, Tobago, British Guiana, Surinam and Panama; the biology of the Black-and White Manakins (*Manacus manacus*); the natural history of the Oilbird (*Steatornis caripensis*) in Trinidad (Part 2); the biology of forest hummingbirds; the breeding biology of Trinidad thrushes; ecology of Trinidad swifts; feeding ecology of tanagers and honeycreepers; the breeding seasons of Trinidad land birds; the time required for feeding by tropical forest birds; weights and measurements of Trinidad birds; flowering and fruiting periods of some Trinidad forest trees, in relation to bird ecology. Thanks to a new grant from the National Science Foundation, he will be able to devote full time to the manuscripts during 1962.

The program for the study of heliconiine butterflies, one of Miss Crane's major interests, was further expanded during the year. Its growth was due partly to the dovetailing of the Simla work with a separate study of butterfly unpalatability and mimicry under the direction of Dr. Lincoln P. Brower of Amherst. In part, also, it was caused by provisional plans for the next two years, which were de-

pendent on the receipt of further support from the National Science Foundation. Notice of the award of the new grant was received at year's end.

In January, the program for the summer's work on heliconiine unpalatability and mimicry was set up with Dr. Brower and his associates, Dr. Jane van Z. Brower and Mr. Charles Collins. During the next five months the Simla staff and their assistants caught or reared and then froze more than 2,500 selected butterflies for the forthcoming experimental session. From early June through August, Mr. Collins used the butterflies in testing the food preferences of fifty Silverbeak Tanagers. The birds were mist-netted in valleys near Simla, kept briefly in captivity, tested in five series and released unharmed in their home territories at the conclusion of their participation in the experiments. The work constitutes the first testing through experimental procedures of these traditional butterfly examples of warning coloration and mimicry. The results, both as a contribution to the still controversial subject of mimicry and to the understanding of the butterflies' evolution, were so worthwhile that the program will be continued during 1962.

In September, Dr. Allegra A. Genest, one of the associate investigators under the 1962 butterfly grant, began work at Simla, through the interim support of the Zoological Society. She continued work on the behavior of larvae, inaugurated by Dr. Alexander, and started studies on the physiological bases of homing and gregarious roosting in adults.

A contribution for *Zoologica*, the first of three on the subject, is ready on the inheritance of patterns in polymorphic species of these butterflies. The material, from Surinam and Trinidad, was bred, reared and tabulated at Simla, after which it was sent to Geneticists Philip M. Sheppard and John R. G. Turner of the University of Liverpool for analysis. The importance of this section of the butterfly study lies in the relation of the results to those obtained in the experimental work on the adaptive value of color and pattern in social behavior and mimicry.

Miss Crane's monograph on the fiddler crabs reached the prefinal phase. A trip to Costa Rica in August filled gaps in the field work and yielded live crabs for detailed study in the crabberies. Further collections of live specimens from Panama and Colombia were received through the kindness of Dr. David Blest and Dr. Thomas Collett, respectively. By year's end laboratory work was practically completed and the preparation of the manuscript in progress. The pen-and-ink illustrations, the work of Julie C. Emsley, were finished; they number 784 individual drawings.

Throughout most of the year, Dr. Beebe was engaged in correlating and editing notes and manuscripts dealing with his comparisons of temperate and tropical species of birds.

Research problems conducted at the Station by visiting investigators included the following: physiological analysis of behavior patterns in saturniid moths (A. D. Blest, University College of London); longevity and responses to drugs in moths (Thomas C. Collett, University College of London); competition in flycatchers (Kenneth Crowell, University of Pennsylvania); ecology and flight habits of hemipterons (Michael C. Emsley, University College of the West Indies); prey detection in fish-eating bats (Donald C. Griffin, Harvard Biological Laboratories); physiology of the inner ear in bats and other mammals (David and Ade Pye, Institute of Otolaryngology, University of London); social behavior and ecology of birds following army ants (Edwin C. Willis, University of California).

CONSTRUCTION AND MAINTENANCE

During 1961 the main house at Simla received a new roof and its large laboratory a terrazzo tile floor. Two concrete crabberies were completed, with pumps for drawing sea water from storage tanks to the crabberies, according to the needs of artificial tides. Fifteen bird cages, each measuring 30 inches on all sides, were constructed according to specifications for the experimental work on warning coloration and mimicry. Special features included observation windows of one-way glass, so that the behavior of the birds would not be affected by sight of the investigator.

Simla provided sleeping accommodations for 27 research workers, including both staff and guest investigators. Between four and twelve individuals were in residence simultaneously. In addition, between one and four commuting laboratory and clerical assistants worked and lunched at the Station.

VISITORS

The scientific guests mentioned above numbered twenty-one, their visits ranging from four days to four and one-half months. The universities and colleges represented included Amherst, California, Columbia, Cornell, Harvard, London, Lund, Maryland, Massachusetts, Miami, Michigan, Pennsylvania, Queensland, Utrecht, West Indies and Yale. We also welcomed staff members of the American Museum of Natural History and of the British Museum (Natural History).

Our non-resident visitors, who came for an hour or a day, totalled somewhere around 400. A fair sampling might list six bird-watchers from Copenhagen, one student from the University at Ipoh, Nigeria, three officers from a U.S. destroyer, two professors from Paris, 19

Trinidad boy scouts, 21 members of the Florida Audubon Society and H. R. H. Princess Alice, the Countess of Athlone.

GIFTS AND GRANTS

The National Science Foundation grant for tropical bird study, supporting the Trinidad work of Dr. Beebe and Dr. Snow, expired at year's end and was replaced by a new grant covering Dr. Snow's salary during the preparation of publications, as recorded above.

The grant by the same organization for the work on heliconiine butterflies, under Miss Crane's direction, also expired, and was replaced by a new grant for the study's continuation and expansion.

The fiddler crab research continued to receive the support of a current National Science Foundation grant, while the balance in a fund from the National Geographic Society was employed in the completion of the new crabberies.

Generous contributions were received from Mr. and Mrs. Bernard Heineman and from Mr. B. Brower Hall. The funds were used for the purchase of beds and house linens to provide accommodation for the year's additional workers.

The Department continued to enjoy the cooperation of the various branches of the Government of Trinidad and Tobago. Finally, good friends on the staffs of the Trinidad Regional Virus Laboratory, the University College of the West Indies (Imperial College of Tropical Agriculture), the Alcoa Steamship Company and the Trinidad Textile Manufacturing Company contributed, as always, in ways both material and non-material to the well-being of the Station and the success of the years' work.

CONTRIBUTIONS, 1961

1005. Bird-banding in the Arima Valley, D. W. Snow. *Animal Kingdom*, LXVI (1): 23-27.
1006. Adventuring with Beebe. Selections from the writings of William Beebe. Viking Explorer Books Edition with new introduction by the author. The Viking Press, pp. 1-282.
1007. A Study of the Biology and Behavior of the Caterpillars, Pupae and Emerging Butterflies of the Subfamily Heliconiinae in Trinidad, West Indies. Part I. Some Aspects of Larval Behavior. Anne J. Alexander. *Zoologica*, 46 (1): 1-24.
1008. The Natural History of the Oilbird, *Steatornis caripensis*, in Trinidad, West Indies. Part I. General Behavior and Breeding Habits. D. W. Snow. *Zoologica*, 46 (3): 27-55.
1009. Butterfly Discoveries and Surprises. Jocelyn Crane. *Animal Kingdom*, LXIV (2): 35-40.
1010. A Study of the Biology and Behavior of the Caterpillars, Pupae and Emerging Butterflies of the Subfamily Heliconiinae in Trinidad, West

- Indies. Part II. Molting, and the Behavior of Pupae and Emerging Adults. Anne J. Alexander. *Zoologica*, 46 (11): 105-124.
1011. Eastern Pacific Expeditions of the New York Zoological Society. XLV. Non-intertidal Brachygnathous Crabs from the West Coast of Tropical America. Part 2. Brachygnatha Brachyrhyncha. John S. Garth. *Zoologica*, 46 (13): 133-159.
1012. My Most Unforgettable Moment. William Beebe. *Popular Mechanics*, May, 1961: 79.
1013. The displays of the manakins *Pipra pipra* and *Tyrannneutes virescens*. D. W. Snow. *Ibis*, 103a: 110-113.
1014. Annual Report of the Department of Tropical Research for 1960.

DEPARTMENT OF EDUCATION

HERBERT J. KNOBLOCH, *Associate Curator*

PHYLLIS K. LINNEMANN, *Assistant*

DORIS S. CELLARIUS, *Assistant in Visual Aids*

CLOSING OF THE Zoological Park for seven weeks in the spring, normally the season of heaviest attendance by school and organized groups, adversely affected this year's totals as recorded by the Education Department.

	<u>1960</u>	<u>1961</u>
Schools and Organizations	4,322	3,329
Classes and Organized Groups	5,964	5,410
Total School/Group Attendance	230,012	191,228

SERVICES

Since December of 1943 the Department has maintained a lecturer as an educational service to the community. Carrying small, tame, "pettable" animals, the lecturer visits schools and other institutions and gives talks illustrated by the animals. This year the lecturer visited 69 schools and other institutions and gave 197 talks before 41,420 pupils. The service is continually in demand and bookings are made well in advance. Members of the department gave a number of lectures and appeared on television and radio programs.

Question House was staffed only on Sundays and holidays. Approximately 30,000 persons passed through and asked 2,900 questions.

Special efforts are made to provide guided tours of the Zoological Park for handicapped and other special groups. Fifty-six such tours were given for 1,716 students.

MOTION PICTURES

In the production of the Society's motion picture films, it is the function of the Department of Publication and Photography to write scripts and make the actual exposure of film. It is then turned over to the Education Department and, with assistance from the Staff Photographer in editing, our own footage and any that may be obtained from outside sources is carried through to the final projection print. Films produced in 1961 were "Around the Year in the Zoo," "Aquarium Varieties," "The White Whales of Bristol Bay" and "Color on the Wing in Trinidad."

A promotional film, "Tomorrow!", was produced for the Society by Evan J. Anton Productions.

Rentals and special showings of the Society's films were as usual handled through the Department.

MISCELLANEOUS

For the fifth year, special "Zoo Trains" from points in New England came to the Zoological Park over the New Haven Railroad lines and events were coordinated by the Department.

The 23rd and 24th In-service Courses for teachers in the New York schools were conducted in the spring and fall, with the cooperation of the Zoo and Aquarium staffs. The Department gave its 11th natural history training course for Girl Scout leaders.

Mr. Knobloch relinquished the chairmanship of the Zoological Park's Safety Committee to Walter Lerchenfeld after 14 years. With Dr. Dowling, he again assisted at the judging of student science exhibits at the Westchester Science Fair.

MEMBERSHIP

GORDON CUYLER, *Membership Chairman*

L. GERALDINE MARSTELLER, *Membership Secretary*

FOR THE FIRST TIME in the Society's history, the membership of the Society totaled more than 4,000; it was 4,073, to be exact, and a net gain of 231 for the year. The importance of this increased support, not only in terms of revenue but in encouragement and support of the Society's programs in education, conservation, research and exhibition cannot be over-stressed.

A calendar of spring events at the Zoo and Aquarium and two

Newsletters from the field were mailed to Members and Member prospects. James Simon sent a Newsletter from Africa depicting the struggle between domestic cattle and wildlife for water and space, and this was followed by a second Newsletter from Sidney Simpelwe, a native African studying wildlife management, giving an African's view on conservation. The Simpelwe Newsletter was mailed from Southern Rhodesia.

SUMMARY OF MEMBERSHIP

DECEMBER 31, 1961

Benefactors	15
Founders in Perpetuity	13
Founders	14
Associate Founders	13
Patrons	47
Life Members	360
Supporting Members	104
Contributing Members	1,314
Annual Members	2,104
Fellows	79
Research Associates	4
Corresponding Members	6
<i>Total</i>	<u>4,073</u>

PUBLICATION AND PHOTOGRAPHY

WILLIAM BRIDGES, *Curator*

DOROTHY REVILLE, *Editorial Assistant*

SAM DUNTON, *Photographer*

HENRY M. LESTER, *Photographic Consultant*

YEARS AGO it was customary to process photographic film under red light. It is a measure of technical advances in film that this past year Staff Photographer Dunton was able to photograph active animals in the Red Light Room of the Small Mammal House by means of red light alone and to obtain a clear, strong motion picture film at the normal exposure of 24 frames per second. The film used was the ultra high speed ER Ektachrome. In some few compartments it was necessary to augment the existing red fluorescent light by spotlights with a red filter.

Much of the red light footage was incorporated in a motion picture showing activities in the Zoological Park. Mr. Dunton also made a film of the year's events at the Aquarium, and contributed a small amount of film to the "Tomorrow!" picture produced for the Society by Evan J. Anton.

The year's photographic work included 682 still negatives, mostly black-and-white. The department acquired 580 Kodachromes of African animals and scenery as a result of the Royal Little-James Simon expedition to East Africa.

In the Photographic Library Mrs. Reville has completed revision of the mammal, bird and reptile photographic albums and is well into a similar re-making of the albums of Aquarium negatives. An illustrated folder of photographic print rates was issued.

Mr. Dunton was elected as a director of the Biological Photographic Association and his photograph of a Puffin diving was given first award in the Association's annual salon, natural science class. He gave a talk on Zoo and Aquarium Photography in February at the Montreal Neurological Institute, before the St. Lawrence Chapter of the B.P.A.

Scripts for 40 Talking Storybooks installed in the Zoological Park in the fall were written. A start was made on reprinting, in readable miniature form of four pages on one, of out-of-print issues of *Zoologica* for which there is continuing demand.

JACKSON HOLE BIOLOGICAL RESEARCH STATION

L. FLOYD CLARKE, *Director*

THE JACKSON HOLE Biological Research Station at Moran, Wyoming, was established by the New York Zoological Society with a series of research studies in 1946, and is now sponsored jointly by the Zoological Society and the University of Wyoming.

Six new projects were started in the summer of 1961, out of a total of 14, in order to give more students an opportunity to work at the station. Research projects were:

Margaret Altmann—The Social Role of the Aging Ungulate. Assisted by John Milton. Supported by the National Institute of Mental Health.

Kenneth B. Armitage—Ecology and Behavior of the Yellow-bellied Marmot. Supported by the National Science Foundation.

Dorothy E. Beetle—Land and Freshwater Mollusks of Jackson Hole.

L. Floyd Clarke, George T. Baxter & H. Bradley House—Ecology of Swan

Lake and Third Creek. Supported by the University of Wyoming and the New York Zoological Society.

Kenneth L. Diem & Garth S. Kennington—Some Aspects of Plant and Animal Distribution as Affected by Geologic Formations. Assisted by Floyd Sandford and Walter Brown, Student Conservation program. Supported by the New York Zoological Society, National Park Service, Olympic Natural History Association and the University of Wyoming Research Council.

Ralph W. Dimmick—Population Study of Canada Geese in Jackson Hole, Wyoming. Supported by the Wyoming Game and Fish Commission.

J. Gordon Edwards—The Alpine Insects of the Teton Range. Supported by the New York Zoological Society.

James H. Enderson—Population Estimate of Brook Trout in the Third Creek Area. Supported by the New York Zoological Society.

Howard E. Evans—Comparative Ethology of Digger Wasps of the Subfamily Nyssoninae. Supported by the National Science Foundation.

Robert W. Lichtwardt—Fungi Living in the Guts of Arthropods. Supported by the National Science Foundation.

Elliott A. Maynard—The Collembola or Springtail Insects of the High Altitude Areas of Yellowstone and Grand Teton National Parks. Supported by the American Philosophical Society.

Norman C. Negus—Rodent Population Studies in Jackson Hole, Wyoming.

Glenn A. Noble—Stress as a Factor in Parasitism. Assisted by Mrs. Noble. Supported by National Institutes of Health.

Paul G. Roofe—Ontogenesis of Secretion in the Skin of the Tiger Salamander. Supported by National Institutes of Health.

THE CONSERVATION FOUNDATION

The 1961 Annual Report of the Conservation Foundation, the affiliate of the New York Zoological Society in conservation work, may be had upon request from the Foundation's offices at 30 East 40th Street, New York 16, N. Y.

SUMMARY OF EXPENDITURES, 1896 to 1961, New York Zoological Society and the City of New York, on Account of the Development and Maintenance of the Zoological Park and the Aquarium, Including the Purchase of Collections and Also for the Scientific and General Purposes of This Society.

Year	EXPENDED BY THE CITY OF NEW YORK			FROM GATE RECEIPTS		EXPENDED BY THE NEW YORK ZOOLOGICAL SOCIETY									
	Zoological Park Maintenance	Aquarium Maintenance	Bond Issues a/c Park & Aquarium	Construction and Repairs	Purchase of Animals	Zoological Park Development	Aquarium Improvements	Zoological Park Maintenance	Aquarium Maintenance	Purchase of Animals	Aquarium Specimens	Heads and Horns Collection	Pension Fund Contribution	Library and Paintings	Scientific and General Purposes
1896	.....	.....	.....	.....	.....	\$ 4,213.63	.....	.....	.....	.....	.....	.....	.....	.....	.....
1897	.....	.....	.....	.....	.....	6,424.61	.....	.....	.....	.....	.....	.....	.....	.....	\$ 2,903.74
1898	.....	.....	.....	.....	.....	23,597.80	.....	\$ 1,292.16	.....	.....	.....	.....	.....	.....	4,339.20
1899	\$ 30,000.00	.....	.....	.....	.....	145,495.80	.....	7,038.61	.....	\$ 8,540.72	.....	.....	.....	\$ 102.76	3,476.02
1900	40,000.00	.....	\$125,000.00	.....	\$ 2,470.88	34,626.24	.....	6,189.33	.....	3,784.32	.....	.....	.....	88.13	5,601.78
1901	65,000.00	.....	300,000.00	.....	2,998.80	18,348.61	.....	3,714.37	.....	11,652.24	.....	.....	.....	462.20	7,597.16
1902	85,000.00	\$ 5,959.97	250,000.00	.....	4,256.50	5,908.69	.....	2,757.57	.....	20,983.07	.....	.....	.....	224.73	11,068.69
1903	104,965.00	46,453.68	280,000.00	.....	5,912.95	1,038.20	.....	.....	.....	20,361.62	.....	.....	.....	456.03	13,608.10
1904	104,965.00	46,439.72	315,000.00	.....	5,421.90	1,013.87	.....	1,894.37	.....	14,299.61	.....	.....	.....	887.16	15,072.84
1905	134,965.00	44,968.50	275,000.00	.....	6,849.00	144.00	.....	.....	.....	20,643.40	.....	.....	.....	418.10	18,773.90
1906	144,965.00	44,987.71	250,000.00	.....	8,132.35	778.48	.....	.....	.....	14,907.36	.....	.....	.....	319.16	17,961.67
1907	141,558.75	44,183.87	100,000.00	.....	8,243.65	370.72	.....	.....	.....	10,606.03	.....	\$ 892.71	.....	644.05	15,990.68
1908	154,627.00	44,157.27	65,000.00	.....	9,446.40	232.27	.....	.....	.....	4,231.61	.....	735.77	.....	1,313.87	14,693.92
1909	162,325.00	45,971.44	10,000.00	.....	9,992.75	2,860.92	.....	.....	.....	9,734.43	.....	7,340.82	.....	609.56	17,168.95
1910	167,632.00	45,974.86	89,500.00	.....	9,909.90	5,918.35	.....	.....	.....	4,339.25	\$ 973.90	2,036.39	.....	1,021.87	20,627.77
1911	174,632.00	47,560.21	155,000.00	.....	11,611.15	1,155.00	.....	.....	.....	6,659.89	1,191.80	1,615.38	.....	1,221.26	23,409.39
1912	182,365.00	46,597.08	.....	.....	11,838.40	40.00	.....	.....	.....	22,750.18	1,350.03	556.94	.....	1,031.55	32,109.01
1913	191,925.00	47,335.62	29,100.00	.....	12,404.25	218.45	.....	.....	.....	10,665.57	1,850.25	486.00	.....	732.97	32,543.88
1914	200,000.00	46,995.53	.....	\$ 9,237.81	3,831.15	2,175.13	.....	.....	.....	22,590.44	1,792.99	338.73	\$3,333.33	3,541.15	28,246.42
1915	200,000.00	46,991.66	21,425.00	9,175.86	.....	887.88	.....	.....	.....	13,629.41	1,466.64	1,024.91	8,000.00	4,181.24	31,368.08
1916	197,074.35	46,996.43	.....	9,599.81	.....	425.30	.....	.....	.....	13,511.12	2,193.57	1,031.47	8,000.00	1,555.12	38,339.99
1917	199,560.00	46,903.61	.....	3,488.31	7,118.90	1,450.05	.....	11,537.79	.....	10,175.70	1,637.15	18.12	8,000.00	2,869.20	44,262.48
1918	207,586.00	48,630.71	.....	2,642.70	.....	48.12	.....	1,580.00	\$ 93.61	8,425.92	960.19	18.61	8,000.00	3,559.85	34,125.49
1919	190,000.00	45,000.00	5,000.00	4,917.84	.....	.....	\$ 3,450.00	19,924.00	407.07	13,345.59	1,028.05	88.27	8,000.00	1,442.07	45,599.71
1920	250,098.27	53,971.48	15,000.00	17,438.28	.....	5,007.00	4,095.03	5,141.92	.....	32,761.08	1,654.02	263.86	8,000.00	2,517.64	51,018.20
1921	276,951.01	65,203.12	88,000.00	25,463.77	.....	88,734.92	53,635.02	6,068.17	976.47	27,442.59	2,165.05	2,661.67	8,000.00	4,698.24	55,684.15
1922	264,618.05	63,341.26	25,000.00	17,060.00	.....	50,888.65	16,153.03	10,074.88	3,326.28	43,047.41	3,057.91	7,191.93	8,000.00	1,765.78	58,797.69
1923	262,724.50	.....	.....	18,388.20	.....	5,000.00	.....	19,019.09	3,319.44	24,456.20	1,432.89	1,550.69	8,000.00	3,391.96	58,404.21
1924	262,471.01	57,319.20	7,970.00	16,806.00	.....	.....	28,233.45	28,956.34	8,097.14	11,560.62	2,013.88	942.34	8,000.00	1,938.77	76,559.41
1925	262,808.69	58,324.89	85,000.00	19,974.05	.....	.....	.....	38,793.01	4,380.45	20,843.01	2,609.55	667.78	8,000.00	1,174.24	242,753.89
1926	273,815.12	62,266.20	1,500.00	20,102.90	.....	.....	.....	45,467.10	7,261.21	23,460.04	2,847.35	306.32	8,000.00	562.40	87,915.27
1927	276,855.19	65,216.89	.....	18,960.48	.....	.....	1,395.00	61,968.22	11,656.97	27,545.92	2,861.55	135.00	8,000.00	2,477.37	82,807.54
1928	319,380.50	88,109.12	.....	18,106.25	.....	2,480.06	.....	52,676.35	10,776.84	21,001.88	2,912.97	107.89	8,000.00	1,168.15	88,794.37
1929	338,359.00	71,229.35	100,000.00	21,957.80	.....	13,095.54	984.85	59,673.38	13,670.81	23,783.69	3,572.14	669.48	8,000.00	4,029.63	122,774.78
1930	350,170.92	81,343.46	50,000.00	20,834.91	.....	2,500.89	375.00	65,600.39	16,966.30	17,492.92	1,355.56	639.04	10,000.00	2,726.37	134,278.88
1931	349,344.95	76,408.08	.....	14,890.58	.....	5,131.68	.....	65,601.03	19,541.40	24,439.56	3,650.58	1,707.40	10,000.00	6,713.26	128,871.12
1932	337,490.01	76,071.24	.....	16,710.25	.....	1,852.40	.....	61,127.48	19,155.01	20,039.28	1,934.84	335.00	10,000.00	3,607.97	97,303.32
1933	268,633.38	67,814.24	5,422.63	13,961.02	.....	.....	.....	62,996.66	18,120.73	7,644.14	2,199.91	118.65	10,000.00	3,384.38	86,757.06
1934	257,423.08	65,806.61	.....	11,025.88	.....	1,037.19	.....	66,502.59	18,229.23	9,267.86	1,641.06	162.86	10,000.00	606.53	81,711.26
1935	265,630.94	68,203.46	.....	11,596.51	.....	.....	.....	60,237.94	18,832.57	16,530.28	2,031.56	275.21	10,000.00	383.07	82,929.14
1936	265,057.37	68,760.95	.....	13,496.42	.....	100.00	.....	57,270.94	17,886.45	20,918.46	2,867.50	178.43	10,000.00	470.18	79,835.73
1937	267,192.29	73,807.74	.....	11,527.85	.....	.....	.....	56,262.45	16,408.55	22,417.08	2,799.17	24.79	19,047.09	1,415.39	92,609.40
1938	282,759.71	79,225.20	.....	10,235.70	.....	.....	.....	57,043.10	13,408.11	15,351.51	558.82	.....	20,455.95	431.41	93,543.56
1939	283,280.81	79,164.23	.....	11,019.23	.....	.....	.....	51,050.57	12,941.70	23,012.27	403.75	175.00	20,475.95	345.30	92,576.90
1940	282,761.15	78,905.12	.....	8,392.10	.....	102,343.87	.....	57,513.25	12,022.76	39,627.52	577.10	.....	20,069.17	533.85	98,501.09
1941	286,284.59	62,052.95	.....	15,947.33	.....	187,408.02	.....	84,254.19	9,466.70	57,236.77	574.40	.....	18,206.34	1,316.89	100,846.55
1942	258,656.76	50,931.00	.....	10,169.20	.....	43,088.43	.....	49,226.40	4,807.79	8,369.36	553.52	.....	10,762.57	401.65	144,765.21
1943	305,203.23	33,324.31	.....	11,904.80	.....	38,860.03	3,500.00	51,833.51	5,154.21	2,319.36	336.19	.....	9,832.98	574.01	73,192.91
1944	315,787.82	33,790.82	.....	17,316.09	.....	32,101.60	23,420.00	50,691.82	3,717.28	5,106.59	96.48	.....	10,234.06	405.52	88,594.55
1945	334,288.37	38,158.81	.....	20,745.35	.....	58,943.48	225.52	58,846.39	5,928.38	11,466.19	460.34	.....	12,681.89	1,001.92	112,541.29
1946	366,113.74	42,654.03	.....	24,688.34	.....	122,388.48	*34,997.55	62,439.25	6,742.70	43,037.09	172.30	.....	14,238.14	741.14	168,881.41
1947	440,147.60	40,285.04	.....	22,665.64	.....	101,392.80	*19,669.26	85,294.53	8,715.67	71,342.79	687.91	.....	15,751.26	690.03	348,442.82
1948	469,638.83	38,564.40	.....	30,690.08	.....	93,683.84	116.71	83,652.16	9,419.90	26,461.29	470.63	.....	16,708.48	1,004.40	346,222.76
1949	497,900.12	40,189.02	.....	25,400.02	.....	344,122.56	*4,203.50	82,044.22	11,170.76	50,408.80	1,370.90	.....	31,251.50	1,220.17	338,513.75
1950	506,035.90	40,188.48	.....	23,731.77	.....	62,598.22	.....	85,411.22	11,404.61	22,947.59	767.71	.....	35,049.90	970.52	296,458.78
1951	553,918.55	42,774.35	.....	28,913.22	.....	69,747.69	.....	94,063.94	12,966.97	17,934.34	613.19	.....	17,936.21	1,365.34	271,579.10
1952	579,931.76	45,909.54	.....	27,588.02	.....	40,542.32	.....	105,641.48	13,721.06	18,806.08	665.69	.....	18,908.55	1,613.36	335,306.47
1953	632,546.60	45,756.46	.....	27,066.78	.....	218,810.05	*9,123.67	97,757.81	14,329.34	23,470.18	468.74	.....	21,806.69	796.50	300,150.64
1954	639,084.84	48,606.34	.....	28,008.91	.....	76,808.53	*746,130.99	100,743.77	14,291.04	22,247.60	781.88	.....	22,999.30	1,383.30	297,832.62
1955	650,172.61	49,049.83	.....	30,615.05	.....	56,213.34	*88,350.00	102,401.35	13,761.57	28,859.77	782.74	.....	23,293.09	6,068.43	321,406.33
1956	738,263.33	36,516.95	.....	29,900.00	.....	61,385.97	*21,768.31	109,039.58	18,175.44	29,141.48	287.81	.....	27,806.41	5,304.83	311,250.88
1957	784,753.54	17,703.99	.....	32,804.54	.....	85,464.03	*161,889.38	128,980.29	185,230.53	23,589.69	139.03	.....	27,423.24	1,857.10	332,630.13
1958	798,532.65	.....	.....	46,659.74	.....	376,298.11	*41,170.39	139,660.77	240,990.37	39,780.98	14,172.54	.....	28,694.95	1,076.32	382,337.62
1959	835,272.07	.....	.....	68,143.83	.....	83,458.41	*348,862.21	163,468.19	254,768.29	50,114.74	12,182.41	18,699.35	30,991.74	1,137.16	424,997.44
1960	871,684.49	.....	.....	71,415.34	.....	51,626.87	*55,557.66	153,678.84	284,261.16						

FINANCIAL STATEMENTS

NEW YORK ZOOLOGICAL SOCIETY

BALANCE SHEET • December 31, 1961

ASSETS

Cash in banks and on hand.....	\$ 252,310.07	
Investments (quoted market value \$9,382,189.03)		7,431,113.18
Receivables:		
City of New York	\$ 268,275.44	
Other	<u>24,750.98</u>	293,026.42
Inventories:		
Park facilities	37,640.83	
Aquarium	<u>13,397.66</u>	51,038.49
Facilities' assets, less depreciation:		
Zoological Park (note 1):		
Improvements to land and buildings.....	276,636.99	
Equipment and miscellaneous items	<u>61,874.37</u>	
	338,511.36	
Aquarium equipment and miscellaneous items	<u>17,352.00</u>	355,863.36
Prepaid expenses and deferred charges		10,801.70
National collection of heads and horns, art gallery, library and sundry items		1.00
Collection of living animals		1.00
Jackson Hole Research Station buildings		1.00
Simla Tropical Research Station		<u>1.00</u>
		<u>\$8,394,157.22</u>

LIABILITIES

Accounts payable and accrued expenses		174,424.31
Payable to the City of New York		109,697.20
Fund reserves:		
General	5,339,260.04	
Endowment	1,830,964.44	
Special Purpose	481,391.02	
Park Facilities Operating	407,457.60	
Aquarium Development	<u>50,962.61</u>	
		8,110,035.71
		<u>\$8,394,157.22</u>

See accompanying notes to financial statements.

STATEMENT OF GENERAL INCOME AND EXPENSE

Year ended December 31, 1961

Income:

Income from investments	\$ 345,601.03
Annual dues	73,283.00
Sales of publications and photographs	5,790.69
Gifts	8,250.00
Portion of grants for operating costs	17,146.93
Miscellaneous income	13,038.24
	<u>\$ 463,109.89</u>

Expense:

Actuary and appraiser fees	2,231.25
Annual report	4,078.76
Aquarium research	10,425.13
Audit fees	2,624.00
Conservation	20,000.00
Custodian fees	2,858.43
Educational activities	23,118.13
Employee welfare	2,811.71
Executive office	44,866.53
Group life insurance	6,797.76
Hospitalization	16,356.60
Insurance	8,558.30
Legal fees	8,040.00
Library	1,157.15
Membership activities	27,698.18
Membership promotion	5,376.24

Pensions:

Fund contribution—150% of employee contributions	\$ 39,333.26	
Auxiliary payments	2,075.03	41,408.29

Publication expenses:

Salaries and other expenses	43,274.47	
"Animal Kingdom"	16,951.73	
"Zoologica"	10,603.67	70,829.87

Reception expense	1,899.93
Social security taxes	3,348.26
Traveling expense	5,106.98
Tropical research	19,584.94

329,176.44

Zoological Park maintenance expenditures ..	1,161,901.11
Less amount provided by New York City ..	<u>993,091.56</u>

Amount expended by New York

Zoological Society	168,809.55
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Deficit carried to General Working Fund	(34,876.10)
---	-------------

\$ 463,109.89

See accompanying notes to financial statements.

GENERAL WORKING FUND

Statement of Changes

Year ended December 31, 1961

Balance at beginning of year		\$ 220,267.41
Add:		
Gifts and legacies	\$ 121,767.08	
Life memberships	2,900.00	
Conservation film royalties	6,911.72	
Pro rata share of net gain on investment transactions	<u>2,367.27</u>	133,946.07
Deduct:		<u>354,213.48</u>
Grants and contributions:		
The Conservation Foundation, Inc.	10,000.00	
Department of Tropical Research, Trinidad, W.I.:		
For operating costs	\$10,000.00	
Building repairs and replacements—Simla ...	1,800.00	
Production of motion pictures	<u>500.00</u>	12,300.00
Jackson Hole Biological Research Station for research and expenses	2,000.00	
Lee S. Crandall for publication on care and exhibition of wild animals in captivity..	3,499.92	
Pacific Science Board of the National Research Council	750.00	
Mid-Fairfield Youth Museum	2,500.00	
Honorarium—Dr. L. Floyd Clarke.....	500.00	
Lee M. Talbot—grants	1,200.00	
The Coryndon Museum	1,200.00	
Dr. Olavi Kalela—grant and transcript cost	2,047.04	
Boone and Crockett Club—predator-prey relationship study	1,300.00	
Colin Bertram—grant	1,000.00	
Other payments:		
Transfer to Madison Grant Scientific Research Fund	3,800.00	
Cost of obtaining Beluga whales for New York Aquarium	16,053.58	
Appropriated for Aquarium—flagstone terrace	1,500.00	
Goldstone & Dearborn—preliminary plans for proposed research laboratory at Aquarium	<u>1,152.73</u>	
	<u>60,803.27</u>	
Deficits:		
General income and expense	34,876.10	
Aquarium operations	<u>124,673.34</u>	
		<u>220,352.71</u>
Balance at end of year		\$ <u>133,860.77</u>
See accompanying notes to financial statements.		

GENERAL DEVELOPMENT FUND

Statement of Changes Year ended December 31, 1961

Balance at beginning of year.....		\$ —
Add:		
Gifts		389,452.62
Gift transferred from Aquarium Development Fund.....		25,000.00
		<u>414,452.62</u>
Deduct:		
Appropriated for Aquarium development—		
walrus pool complex	\$ 144,000.00	
Appropriated for fund raising		
campaign expenses:		
G. A. Brakeley and Co. Inc... \$29,999.97		
Fund raising campaign office	<u>29,144.99</u>	<u>59,144.96</u>
		203,144.96
Balance at end of year.....		<u>\$ 211,307.66</u>
See accompanying notes to financial statements.		

AQUARIUM DEVELOPMENT FUND

Statement of Changes Year ended December 31, 1961

Fund balance at beginning of year.....		\$ 177,063.98
Add:		
Appropriation from the general funds of the		
Society, net	\$ 120,500.00	
Gift	<u>100.00</u>	<u>120,600.00</u>
		297,663.98
Deduct expenditures during year for construction of additional		
facilities and exhibits		246,701.37
Fund balance at end of year.....		<u>\$ 50,962.61</u>
See accompanying notes to financial statements.		

NEW YORK AQUARIUM

Statement of Income and Expense and Operating Reserve Fund

Year ended December 31, 1961

Aquarium operations:	
Admissions	\$ 142,562.25
Miscellaneous income	710.96
	<u>143,273.21</u>

Less:

Salaries and wages	\$ 203,158.61	
Supplies, materials, equipment and services	56,907.84	
Administration costs	43,053.21	
Collections	1,717.85	304,837.51
	<u>204,837.51</u>	
Loss from operations		(161,564.30)

Aquarium facilities:

Receipts from sales and services	89,669.16
--	-----------

Less:

Cost of merchandise sold	\$24,570.17	
Operating and maintenance supplies	7,100.87	
Salaries and wages	31,107.16	62,778.20
	<u>38,778.00</u>	
Profit from facilities		26,890.96
Net loss		(134,673.34)

Contractual reimbursement of operating loss
for year:

City of New York	10,000.00	
New York Zoological Society	124,673.34	
	<u>134,673.34</u>	

Fund balance at beginning and end of year	\$ —
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See accompanying notes to financial statements.

PARK FACILITIES

Statement of Income and Expense and Operating Fund

Year ended December 31, 1961

Receipts from sales at restaurants, stands, etc. and from services			\$ 998,916.62
Less:			
Cost of merchandise sold.....	\$ 266,602.31		
Salaries and commissions.....	458,489.09		
Operating and maintenance supplies.....	96,417.32		
Depreciation	29,460.22		
Comprehensive public liability insurance...	14,145.18		
Other operating and general expenses.....	<u>42,565.55</u>	907,679.67	
Net income from sales at restaurants, stands, etc. and from services (note 1)		91,236.95	
Fund balance:			
Balance at beginning of year.....	406,220.65		
Deduct:			
Appropriations for park improvements	\$50,000.00		
Appropriations for the purchase of animals	<u>40,000.00</u>	<u>90,000.00</u>	
		316,220.65	
Balance at end of year.....		\$ <u>407,457.60</u>	

See accompanying notes to financial statements.

PERMANENT WILDLIFE PROTECTION FUND

December 31, 1961

Amount due from New York Zoological Society	\$ 19,317.40
Investments, at book value (quoted market value \$220,790.75)	<u>168,408.10</u>
Amount of Fund at beginning of year	\$ 175,893.13
Add net gain on investment transactions.....	<u>11,832.37</u>
Principal Fund at end of year.....	\$ <u>187,725.50</u>

GIFTS, GRANTS AND LEGACIES RECEIVED

Year ended December 31, 1961

General Working Fund:

George F. Baker, Jr.....	\$	1,161.84
Booth Ferris Foundation.....		5,000.00
Nixon Griffis		567.93
Irene Hayes		500.00
Mr. & Mrs. Dulaney Logan.....		470.00
Mrs. Paul Moore		1,000.00
Estate of Evelina B. Perkins.....		10,000.00
Bernard Peyton Charitable Trust.....		1,000.00
Laurance S. Rockefeller		16,340.63
Fred L. Rosenstiel		543.75
Estate of Herbert F. Schwarz.....		1,000.00
The Thorne Foundation		3,000.00
Estate of J. Watson Webb		80,614.05
Anonymous		568.88
		<u>121,767.08</u>

General Development Fund:

Mr. & Mrs. Winthrop W. Aldrich.....	\$	5,166.00
Mr. & Mrs. Robert E. Blum.....		5,000.00
The Bryce Foundation		1,000.00
James Walter Carter		2,500.00
William Rogers Coe		21,860.00
The Coe Foundation		20,000.00
John Elliott		500.00
Childs Frick	\$23,650.00	
Less amounts designated for other organizations:		
Bermuda		
Aquarium and Museum ...	\$5,500.00	
Bermuda Biol- ogical Station for Research	2,000.00	
The Conserva- tion Founda- tion, Inc. ...	<u>7,000.00</u>	<u>14,500.00</u>
		9,150.00
Henry Clay Frick		11,886.09
Robert I. Gannon, S. J.		200.00
James Foundation of New York, Inc.....		100,000.00
Robert Lehman Foundation		1,000.00
The Beatrice Goelet Manice Foundation (In Memory of William De Forest Manice)		1,000.00
Mortimer & Harriet M. Marcus Foundation		1,000.00
Otto Marx, Jr.		6,000.00
Carried forward	\$	<u>186,262.09</u>

121,767.08

Brought forward		\$ 121,767.08
General Development Fund, continued:		
Brought forward	\$ 186,262.09	
Mrs. Cordelia Scaife May	10,185.00	
David H. McAlpin	12,750.00	
Merck Family Fund	3,500.00	
Joseph Mindell	250.00	
Morris Natelson	997.50	
Harold J. O'Connell	1,543.50	
Fairfield Osborn	2,000.00	
Nathaniel A. Owings	1,000.00	
Richard C. Patterson, Jr.	1,000.00	
Mr. & Mrs. Howard Phipps	13,050.00	
Howard Phipps Charitable Foundation....	12,500.00	
John Pierrepont	5,368.50	
Eben W. Pyne	2,831.25	
W. T. Rasmus	300.00	
Readers Digest Foundation	2,500.00	
Edward J. Scheider	250.00	
The Schiff Foundation	5,000.00	
The Schiff Foundation (In Memory of Michael Rockefeller)	50,000.00	
Richard Shields Charitable Trust	500.00	
Mrs. Albert Spalding	100.00	
Joseph A. Thomas	24,791.78	
Martha D. & Joseph A. Thomas Foundation	25,000.00	
Thorne Foundation	25,000.00	
Robert Winthrop	2,500.00	
Others (under \$100.00)	273.00	389,452.62

Mary Thurston Cockroft Fund—		
Estate of Mary Thurston Cockroft		11,200.59
Animal Nursery Construction Fund—Victor H. Scales		25.00

African Wildlife Fund:		
Aloise Baker	100.00	
Alexander Bright	200.00	
James Walter Carter	2,500.00	
Mrs. C. Reed Cary	150.00	
Frederic C. Church Foundation	1,000.00	
Mrs. Murray S. Danforth, Jr.	100.00	
Mrs. Daniel Crena de Iongh	100.00	
Susan Dryfoos	100.00	
Paul Esselborn Geier	125.00	
Mrs. Joseph F. Gunster	200.00	
Henry J. & Drue E. Heinz	300.00	
Ruth S. Heyman	100.00	
Carried forward	\$ 4,975.00	522,445.29

Brought forward	\$	522,445.29	
African Wildlife Fund, continued:			
Brought forward	\$	4,975.00	
Robert L. Huffins, Jr. Foundation, Inc.....		1,000.00	
Cliff M. Jackson		100.00	
E. Randall Keeney		100.00	
Warren Kinney		500.00	
The Little Foundation		3,500.00	
George William Miller		1,000.00	
Roger Milliken		1,000.00	
Mrs. Marguerite S. Nichols.....		100.00	
James S. Pass		300.00	
Amelia Peabody		100.00	
James E. Robinson		1,334.75	
Richard M. Scaife		4,537.50	
Clarke Simonds		1,000.00	
Mrs. Albert Spalding		250.00	
Mrs. S. Emlen Stokes		100.00	
Robert G. Stone		3,500.00	
Rupert C. Thompson		1,000.00	
F. A. Wardenburg		1,000.00	
Others (under \$100.00)		438.00	25,835.25
Bahamas Fund—W. W. Smith Foundation			1,000.00
Fund for Conservation Education in Tanganyika:			
Copley Amory, Jr.		4,478.25	
Mr. & Mrs. William H. Eddy, Jr.....		2,946.00	
Eugene Victor Thaw		500.00	7,924.25
Damon Runyon Memorial Fund for Cancer Research.....			10,800.00
Madison Grant Scientific Research Fund—			
Estate of De Forest Grant			34,668.00
National Institutes of Health			27,767.06
National Science Foundation			25,874.25
Royal Little-James Simon African Film Project Fund.....			15,000.00
Carried forward	\$	671,314.10	

Brought forward		\$ 671,314.10
Special Projects Fund:		
Amherst College	\$ 800.00	
Walter C. Baker	1,000.00	
Dorothy Jordan Chadwick Fund.....	250.00	
Percy Chubb II	100.00	
J. R. Conneally	500.00	
Fulton Cutting	100.00	
Robert G. Goelet	2,056.25	
B. Brower Hall	100.00	
Bernard Heineman	100.00	
J. Seward Johnson	922.50	
Polly & Gilbert Kahn Foundation	100.00	
Warren Kinney	500.00	
Marion G. McLean	300.00	
The Aaron E. Norman Fund, Inc.	350.00	
Mrs. Laurance S. Rockefeller	100.00	
Estate of Louis Rose	100.00	
Mrs. Axel Rosin	100.00	
Scherman Foundation, Inc.	250.00	
The Jack & Irene Hayes Solomon Foundation	200.00	
The Target Rock Foundation	250.00	
Time, Incorporated	250.00	
Union Foundation	2,500.00	
Anonymous	100.00	
Others (under \$100.00)	566.00	11,594.75
		<u>100.00</u>
Aquarium Development Fund—John Elliott		100.00
Aquarium Special Purpose Fund:		
George V. McLaughlin	100.00	
Other	5.00	105.00
		<u>683,113.85</u>
Total		
General income:		
Dorothy Jordan Chadwick Fund	250.00	
The Chase Manhattan Bank Foundation...	1,000.00	
New York Times Foundation	1,000.00	
Rockefeller Brothers Fund	5,000.00	
Rockefeller Center, Inc.	1,000.00	
		<u>8,250.00</u>
		\$ <u>691,363.85</u>

NOTES TO FINANCIAL STATEMENTS:

- (1) Park facilities' assets are subject to an agreement with the City of New York, and the net income from park facilities' operations may be used only for the purchase of animals and the improvement of Zoological Park.
- (2) The balance sheet does not include the assets and liabilities of The Pension Fund.
- (3) The New York Zoological Society and the City of New York have agreed to construct an Aquarium, as funds become available, at an estimated total cost (to be shared equally) of \$7,100,000.00, of which the initial stage (\$1,565,134.00) was completed May 31, 1957.
- (4) The New York Zoological Society and the City of New York have agreed to construct new water wells and a seawater treatment plant at the New York Aquarium at an estimated total cost (to be shared equally) of \$332,000.00. At December 31, 1961, disbursements totaled \$303,977.44, of which the Society's share was \$150,701.69 with \$101,701.69 being owed to the City of New York.
- (5) The New York Zoological Society and the City of New York have agreed to construct a new Aquatic Bird House at the New York Zoological Park at an estimated total cost (to be shared in a 25/75 ratio) of \$481,600.00. At December 31, 1961 disbursements totaled \$17,664.29, of which the Society's share owed to the City of New York was \$4,061.07.
- (6) The New York Zoological Society has entered into an agreement to construct a Polar Bay exhibit at the New York Aquarium. At December 31, 1961 disbursements totaled \$116,857.67 of an estimated total cost of \$144,000.00.

THE PENSION FUND

(Founded by Andrew Carnegie)

Statement of Cash Transactions

Year ended December 31, 1961

Balance at beginning of year:

Investments (quoted market value, \$2,022,713.92)	\$1,770,196.13
Uninvested balance of cash.....	46,955.28
	<u>1,817,151.41</u>

Receipts:

Income from investments:

Interest	\$ 30,657.23
Dividends	55,397.23
	<u>86,054.46</u>

Contributions by employees:

Regular	\$ 38,286.02
Special	1,627.90
	<u>39,913.92</u>

Contributions by New York

Zoological Society:

Society	39,333.26	
Facilities	9,833.32	
Aquarium	8,331.26	57,497.84
	<u>57,497.84</u>	<u>183,466.22</u>
		<u>2,000,617.63</u>

Expenditures:

Refunds on account of resignations.....	9,952.32	
Pension disbursements	47,039.12	
Pension payments to heirs of deceased employees and pensioners	233.89	57,225.33
	<u>57,225.33</u>	<u>1,943,392.30</u>

Net gain on investment transactions..... 26,924.78

	<u>Market</u>	<u>Value</u>	<u>Book</u>
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Balance at end of year:

Investments:

Bonds	\$ 868,576.88	891,925.22
Preferred stocks	290,500.00	351,134.11
Common stocks	1,181,544.39	648,632.57
	<u>\$ 2,340,621.27</u>	<u>1,891,691.90</u>

Accrued interest purchased.....	113.47
Uninvested balance of cash.....	78,511.71
	<u>78,511.71</u>

\$1,970,317.08

PEAT, MARWICK, MITCHELL & CO.

ACCOUNTANTS AND AUDITORS

Seventy Pine Street
New York 5, N. Y.

ACCOUNTANTS' REPORT

THE BOARD OF TRUSTEES

NEW YORK ZOOLOGICAL SOCIETY:

We have examined the balance sheet of New York Zoological Society as of December 31, 1961 and statements of the transactions of the various funds of the Society, including the schedules in support of such statements, and of The Pension Fund for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. It was not practicable to confirm the receivable from the City of New York by communication with it, but we satisfied ourselves as to the account by means of other auditing procedures. As to gifts, grants and legacies, it was not practicable because of their nature to extend the examination beyond accounting, on a test basis, for the receipts as recorded.

In our opinion, the accompanying balance sheet and statements of transactions of the various funds of the Society, together with the supporting schedules, present fairly the financial position of the Society at December 31, 1961 on the basis stated therein, and the changes in the funds of the Society for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

PEAT, MARWICK, MITCHELL & Co.

New York, N. Y.

February 28, 1962

NEW YORK ZOOLOGICAL SOCIETY

INCORPORATION of the New York Zoological Society by the State of New York was accomplished under Chapter 435 of the Laws of 1895 and the basic purposes of the Society were embodied in Section 2:

Said corporation shall have power to establish, maintain and control zoological parks, gardens, or other collections for the promotion of zoology and kindred subjects, and for the instruction and recreation of the people. Said corporation may collect, hold and expend funds for zoological research and publication, for the protection of wild animal life, and for kindred purposes, and may promote, form, and co-operate with other associations with similar purposes, and may purchase, sell, or exchange animals, plants, and specimens appropriate to the objects for which it was created.

Subsequently, at a special meeting of the Commissioners of the Sinking Fund, City of New York, held on March 24, 1897, a resolution was passed allotting South Bronx Park for the use of the New York Zoological Society and establishing the terms of a management agreement under which the Society has operated since that date, with only minor modifications.

The resolution of March 24, 1897, and the supplemental agreement of January 24, 1942, provided that the Society should furnish the original equipment of buildings and animals, that it should raise \$250,000 by subscription within three years of the date of starting work on the improvement of the grounds, that the Society should have the right to establish an endowment fund to be used solely for the general uses and purposes of the Society unless otherwise specified by the donors, that the City of New York should provide funds for the maintenance and care of the Zoological Park and for the maintenance of the animal collections, that the Zoological Park should be open to the public free at least four days a week, that the Society may expend the net proceeds of facilities only for the purchase of animals and the improvement of the Zoological Park and that the Society should have the right to make and control all appointments of employees and to fix salaries and make promotions.

NEW YORK ZOOLOGICAL SOCIETY

Organized 1895

Presidents

I. ANDREW H. GREEN	1895 to 1897
II. LEVI P. MORTON	1897 to 1909
III. HENRY FAIRFIELD OSBORN	1909 to 1925
IV. MADISON GRANT	1925 to 1937
V. W. REDMOND CROSS	1937 to 1940
VI. FAIRFIELD OSBORN	1940

First Vice-presidents

I. J. HAMPTON ROBB	1895 to 1897
II. HENRY FAIRFIELD OSBORN	1897 to 1909
III. SAMUEL THORNE	1909 to 1916
IV. MADISON GRANT	1916 to 1925
V. FRANK K. STURGIS	1925 to 1932
VI. W. REDMOND CROSS	1932 to 1937
VII. KERMIT ROOSEVELT	1937 to 1939
VIII. ALFRED ELY	1939 to 1959
IX. LAURANCE S. ROCKEFELLER	1959

Second Vice-presidents

I. CHARLES E. WHITEHEAD	1895 to 1902
II. JOHN L. CADWALADER	1902 to 1915
III. MADISON GRANT	1915 to 1916
IV. FRANK K. STURGIS	1916 to 1925
V. HENRY D. WHITON	1925 to 1930
VI. KERMIT ROOSEVELT	1930 to 1937
VII. ALFRED ELY	1937 to 1939
VIII. LAURANCE S. ROCKEFELLER	1939 to 1959

Honorary Vice-president

I. DEFOREST GRANT	1957 to 1960
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Treasurers

I. L. V. F. RANDOLPH	1895 to 1901
II. CHARLES T. BARNEY	1901 to 1903
III. PERCY RIVINGTON PYNE	1903 to 1922
IV. CORNELIUS R. AGNEW	1922 to 1953
V. DAVID H. McALPIN	1953

Secretaries

- I. MADISON GRANT1895 to 1925
- II. WILLIAM WHITE NILES.....1925 to 1935
- III. FAIRFIELD OSBORN1935 to 1940
- IV. HAROLD J. O'CONNELL.....1941 to 1959
- V. G. W. MERCK.....1959

Chairmen, Executive Committee

- I. CHARLES E. WHITEHEAD.....1895 to 1896
- II. HENRY FAIRFIELD OSBORN.....1896 to 1903
- III. CHARLES T. BARNEY.....1903 to 1907
- IV. HENRY FAIRFIELD OSBORN.....1907 to 1909
- V. MADISON GRANT1909 to 1937
- VI. W. REDMOND CROSS1937 to 1940
- VII. LAURANCE S. ROCKEFELLER.....1940 to 1943
- VIII. FAIRFIELD OSBORN1943 to 1945
- IX. LAURANCE S. ROCKEFELLER.....1945

Directors

- I. WILLIAM T. HORNADAY
Zoological Park1896 to 1926
- II. CHARLES H. TOWNSEND
New York Aquarium.....1902 to 1937
- III. W. REID BLAIR
Zoological Park1926 to 1940
- IV. ALLYN R. JENNINGS
Zoological Park1940 to 1941
- V. CHARLES M. BREDER, JR.
New York Aquarium.....1937 to 1943
- VI. JOHN TEE-VAN
Zoological Park1952 to 1956
General Director, Zoological Park & Aquarium. 1956
- VII. CHRISTOPHER W. COATES
New York Aquarium.....1956
- VIII. JAMES A. OLIVER
Zoological Park1958 to 1959
- IX. WILLIAM G. CONWAY
Zoological Park1961

BOARD OF TRUSTEES

City of New York

Ex-officio

HON. ROBERT F. WAGNER, *The Mayor*

HON. NEWBOLD MORRIS, *Commissioner of Parks*

Class of 1962

A. RAYMOND DOCHEZ

PETER GIMBEL

ROBERT G. GOELET

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General Office: 630 Fifth Avenue, New York 20, N. Y.

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EBEN PYNE

HERBERT F. SCHIEMANN

JOHN TEE-VAN

ANDREW WINNEGAR

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ELI WHITNEY DEBEVOISE

B. DANFORTH ELY

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JOHN TEE-VAN

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LAURANCE S. ROCKEFELLER

SAMUEL B. WEBB

JOHN TEE-VAN

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